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U.S. Department of Energy
FY 2000 Congressional Budget Request

Science, Security and Energy: Powering the 21st Century

Budget Highlights

Office of Chief Financial Officer

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Budget Highlights

The FY 2000 Budget Request for the U.S. Department of Energy

Introduction

The Department of Energy serves the nation by providing innovative science and technology solutions to the foremost scientific, national security, energy, and environmental challenges facing America's future. This budget proposes investments to provide the technical and scientific infrastructure needed to ensure: a safer world; enhanced energy security; a cleaner environment; and a strong economy for the United States into the 21st Century.

In FY 2000, the Department of Energy operating budget is $717.0 million higher than in FY 1999 -- a 4.1 percent increase. However, because of one-time adjustments, the request in budget authority totals $17.8 billion, which is slightly below the amount appropriated in FY 1999. The major changes from the FY 1999 appropriation are:

+$138 million	❖	to advance the nation's scientific capabilities;
+$131 million	❖	to fund science-based stockpile stewardship in support of the Comprehensive Test Ban Treaty;
+$109 million	❖	to address the many threats of nuclear, biological and chemical proliferation;
+$208 million	❖	to emphasize energy efficiency and renewable energy; and
+$114 million	❖	for environmental quality programs of which nearly $100 million is to advance our environmental management program.
+$17 million	❖	net total of other program changes
+$717 million		***in net program increases, or a 4.1 percent increase***
- $525 million	❖	one-time emergency funding for Russian HEU purchase ($325 million); and plutonium disposition projects in Russia ($200 million); and
- $206 million	❖	increased deferral of Clean Coal Technology funds;
-$14 million		***total net change in DOE FY 2000 budget request***

Science, Security and Energy: Powering the 21st Century

The investments the Department proposes to make in this budget will help give America: science and technology; increased security; more environmentally desirable new energy options; and environmental improvements to power American progress into the 21st Century.

First, the Department's investment in science and technology has been an important part of America's scientific infrastructure -- whether in physics, chemistry, biology, or computation.

For example, this Department initiated the Human Genome Program and is presently pursuing an ambitious microbial genomics program to see how microbes could eventually be put to use to help advance the Department's missions in energy and environmental cleanup, among others.

In FY 2000, this budget features two major increases: $84 million to continue construction of the *Spallation Neutron Source* that will provide scientists in academia, industry, and government, state of the art capability in materials research that will improve the medicines, chemicals, and products used throughout our economy. There is also a new $70.0 million program, the *Scientific Simulation Initiative (SSI)*, to develop new supercomputing tools to provide U.S. scientists and engineers with extremely powerful simulation capabilities. These ultimately will transform the way we conduct research and make our products; be they new airplanes, new cars, or new medicines and materials.

Second, the Department's investments to achieve a more secure world have been an important part of America's national security since the inception of the Manhattan Project. Our budget provides an increase of $131.0 million to protect the safety, security, and reliability of America's nuclear deterrent. It also provides an increase of $109.0 million to fight the proliferation of weapons of mass destruction by securing nuclear materials and expertise in the Former Soviet Union and accelerating the development of technologies to counter chemical and biological terrorism. A total of $265 million is included as part of the President's *Expanded Threat Reduction Assistance (EXTRA)* program, to reduce the threat of nuclear materials in Russia.

Third, the Department's investment in energy resources continue the development of new, more environmentally desirable energy options, including ways to increase the efficiency with which we use energy. Our request includes an increase of $208.0 million for Energy Efficiency and Renewable Energy programs. Among the benefits we expect: extremely efficient and durable automobiles which are as safe and comfortable as our present ones; new ways to use coal efficiently with fewer impacts on our environment; new ideas for using nuclear energy; and extending the life of existing plants.

Fourth, the Department's investment in environmental quality, with a $114.0 million budget increase, of which nearly $100.0 million is for our environmental management program, will continue the scientific work to evaluate the suitability of Yucca Mountain as a potential repository for the country's civilian nuclear waste, and help correct the degradation that occurred at our weapons production sites during the Cold War. The budget will also help create new job and business opportunities, support health studies of our workers and communities, and increase the number of buildings and acres of land that we can return to civilian use, where they will once again help power the growth of the American economy.

The Department will use its expertise in science, security, and energy to advance its important missions in ways that will result in important benefits to the quality of life for ourselves and for generations to come.

The FY 2000 Budget: Serving the Department's Core Missions

FY 2000 — Investments for America's Future

As in previous years, the Department's FY 2000 request is organized into four primary lines of business: science and technology, national security, energy resources, and environmental quality consistent with DOE's core mission statement:

"To foster a secure and reliable energy system that is environmentally and economically sustainable, to be a responsible steward of the nation's nuclear weapons, to clean up our own facilities, and to support continued United States leadership in science and technology."

The Department established six key goals that drove all strategic planning and budgeting decisions in the development of the FY 2000 budget request:

- Leveraging the Department's unique science and technology capabilities to provide knowledge that drives the nation's future;
- Ensuring the continuing safety, security, and reliability of the U.S. nuclear weapons stockpile;
- Reducing the threat to global peace posed by weapons of mass destruction;
- Preserving America's energy security while developing cleaner and more efficient fuels and energy systems for the future;
- Restoring, stabilizing, protecting, and enhancing the environment; and
- Stimulating U.S. economic productivity.

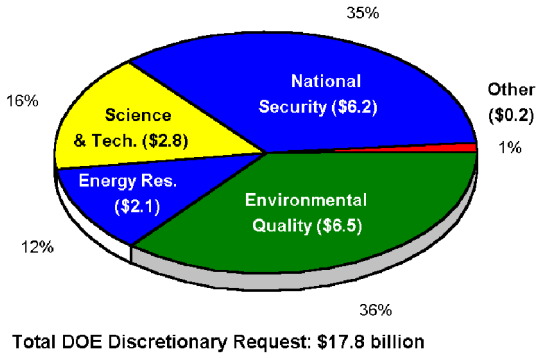
The Department of Energy...

- Owns and manages over 50 major installations located on 2.4 million acres in 35 states
- Owns and oversees some of the nation's most valuable laboratories
- Operates the largest environmental cleanup program in history
- Administers the largest pollution prevention and energy efficiency programs in the world
- Is an integral member of America's Community
- Plays a pivotal role in the Comprehensive Test Ban Treaty activities
- Ensures the safety, security and reliability of the U.S. nuclear weapons stockpile
- Manages radioactive wastes, surplus nuclear materials, and spent nuclear fuels
- Is a lead agency in responding to a nuclear terrorist attack in the United States
- Conducts breakthrough research in high energy physics, global climate change, human and microbial genomics, superconducting materials, accelerator technologies, and supercomputing
- As operator of the Strategic Petroleum Reserve, is a linchpin of America's energy security with the world's largest petroleum stockpile of 561 million barrels of oil

Highlights of the FY 2000 Budget

The FY 2000 operating budget for the Department of Energy is $717 million higher than in FY 1999 — a 4.1 percent increase. However, because of one-time adjustments, the FY 2000 request in budget authority totals $17.8 billlion, which is slightly below the amount appropriated in FY 1999.

Budget Highlights



The reason is that in FY 1999 there was a one-time only emergency appropriation for the purchase of Russian Highly Enriched Uranium ($325.0 million) and for plutonium disposition projects in Russia ($200.0 million), that totaled $525.0 million. Also in FY 1999, funding for the Department was partially offset by the deferral of $40.0 million in Clean Coal Technology funds, while a $246.0 million deferral is proposed for FY 2000. When these anomalies are factored in, the actual FY 1999 operating budget is $17.4 billion, compared to an actual FY 2000 operating budget request of $18.1 billion, an increase of $717 million.

How We Have Changed...

- We've reduced our federal employee workforce by 25 percent in four years
- We sold the Elk Hills Petroleum Reserve which brought $3.65 billion into the U.S. Treasury. This was the largest federal divestiture ever, and collected over $2 billion more than originally estimated by Congress
- We are maintaining a safe and reliable nuclear arsenal without underground testing
- DOE has moved away from the Cold War buildup of weapons toward reducing our stockpile
- Our weapons technicians have safely dismantled more than 11,000 nuclear warheads since 1990
- We accelerated the cleanup of the Cold War's environmental legacy from the production of nuclear weapons
- Our scientists now have the world's fastest supercomputers, capable of 3 trillion operations per second; by 2004, will have one capable of 100 trillion operations per second
- We are helping the Former Soviet Union countries safeguard and reduce their nuclear weapons arsenal
- We are applying the excellence of our laboratories in chemical and biological sciences to the challenge of detecting and defeating the threat of a terrorist chem/bio attack.

Science & Technology: Creating Ideas, Jobs, Products and Industries for Tomorrow

Science & Technology — Strengthening Our National Scientific Infrastructure

The Department of Energy is a science agency; however, our involvement in breakthrough science and technology is not well-known to most Americans. The truth is, the Department of Energy is a science and technology agency because to successfully meet our missions and goals requires advances in technologies and knowledge beyond that which is currently available. Each of DOE's mission areas relies on cutting edge science and technology to achieve its objectives: whether it is our national security mission, to ensure that our enduring nuclear weapons stockpile remains safe, secure, and reliable; or our activities to counter the spread of weapons of mass destruction (WMD); or our energy mission to achieve continued reductions in the economic and environmental costs of producing and using energy resources; or our environmental cleanup program.

The Department of Energy, through its extensive system of national laboratories and partnerships with industries, academia, and other R&D performers, plays a major role in our nation's R&D system. DOE's national labs' employ nearly 30,000 scientific and technical personnel. DOE will spend a total of $7.0 billion in R&D in FY 1999 and plans to spend $7.5 billion in FY 2000. DOE is among the top five federal R&D funding agencies regardless of the criterion used: total R&D, basic research, applied research, development, or academic research. DOE also usually ranks first in the construction of major scientific facilities.

The world-class excellence of the science and technology programs DOE supports can be seen in the recognition our labs and scientists receive. To date, Department of Energy associated scientists have won 72 Nobel prizes.

- With 487 lifetime awards, the Department was also the largest 1998 winner of R&D 100 Awards—awarded annually by *R&D Magazine* for the 100 top advancements in science and technology most likely to benefit society. In 1998, DOE scientists won 34 of these awards;
- DOE technologies won two out of ten *DISCOVER* Magazine awards for 1998;
- The Nobel Prize in Physics winner for 1998, Robert Laughlin, did his early work at DOE's Lawrence Livermore National Laboratory. Dr. Laughlin's theory explained an effect where electrons in magnetic fields at low temperatures can condense into a new state of matter, a form of "quantum fluid.";
- Researchers from four DOE labs won the 1998 Gordon Bell prize, given by the high performance scientific computing community for best performance of a supercomputing application. Another Bell prize recognized a DOE effort achieving the best price/performance level on a computer system;
- *Science* magazine's "Breakthrough of the Year for 1998" was shared by DOE's Supernova Cosmology Project, based at Berkeley Lab. Researchers confirmed the universe is expanding at an accelerating rate, in line with Albert Einstein's postulated "cosmological constant.". Using a telescope designed at DOE's Berkeley Laboratory, they discovered the oldest and most distant supernova.

All of the Department's programs are infused with science and technology. However, one of our business lines is called the "Science and Technology" line because it is comprised only of programs that pursue basic science. Our total FY 2000 request for Science and Technology programs is $2.844 billion, or $138 million higher than FY 1999. Areas featured in the FY 2000 budget request include:

Scientific Simulation Initiative (SSI): The Department is launching a major effort as part of the President's Information Technology for the Twenty-first Century Initiative, the *Scientific Simulation Initiative (SSI)*, to develop supercomputers and the associated software that will revolutionize American innovation in energy, environment, basic research, and technology development in the next century. The Department is requesting $70 million to establish a multi-agency partnership with the National Science Foundation, among others, to develop a national terascale (capable of doing trillions of operations per second) computing infrastructure and apply it to complex civilian science and engineering problems of national importance; such as climate change, combustion, materials, and structural genomics. The application of sophisticated simulation technology will provide new tools that will revolutionize our society, and improve our standard of living.

Spallation Neutron Source: In FY 2000, the Department requests $214 million, an increase of $84 million, for the accelerator-based neutron scattering facility, the *Spallation Neutron Source*, to support research in broad areas of physical, chemical, materials, biological, and medical sciences. This world-class facility will advance the nation's scientific, medical, and industrial capabilities by enabling a more complex understanding of the make-up of materials. As examples, chemical companies use neutron scattering research to make better fibers, plastics, and catalysts; drug companies use neutrons to design drugs with higher potency and fewer side effects; and automobile manufacturers use the penetrating power of neutrons to better understand how to cast and forge improved and longer lasting gears and brake discs.

Scientific Facilities: At the core of the Department's strength in science and technology is our state-of-the-art research facilities and the support we provides to researchers throughout the country to use these facilities. We are requesting $1,149.0 million in FY 2000 as part of the Scientific User Facilities Initiative, an increase of $29.0 million over FY 1999. This funding will allow 15,000 researchers access to operating time at our world class scientific facilities. The FY 2000 budget also includes funding for first-time operation of several new facilities: the *Fermi Main Injector* in Illinois; the *B-Factory* facility in California; the *Relativistic Heavy Ion Collider* in New York; the final year of construction of the *Combustion Research Facility* in California; and completed fabrication of the *National Spherical Torus Experiment* in New Jersey.

Science Education: As one of America's largest employers of highly-skilled and educated scientists and engineers, DOE is acutely aware of the need for improved science education in our schools and colleges. The new millennium will demand even more technological training in almost every job category. The Department's national laboratories have been deeply immersed for more than forty years in helping train tomorrow's scientists, engineers, and technicians. Their innovative educational efforts include laboratory internships, summer classes for science teachers, demonstrations in schools, and student visits to the labs.

The Department knows it has many one-of-a-kind scientific facilities which provide state-of-the-art opportunities to excite students and entice them into careers in science. In FY 2000 we seek a new investment of $10 million (in addition to $4.5 million within the base program) to help train tomorrow's science professionals, leverage the educational efforts already underway at our labs, and expand the Department's outreach to minority students.

Biological and Environmental Research (BER): Many of the Department's most exciting and innovative technologies in the fields of medicine and environmental science are supported by the BER program within the Office of Science. The FY 2000 request for this program is $411.2 million. In FY 2000, this program will continue to support fundamental research into the understanding of global climate and the carbon cycle. As part of the *Climate Change Technology Initiative*, the Department is working to sequence the genomes of hydrogen and methane producing microbes, as well as microbes that could be used to sequester carbon dioxide.

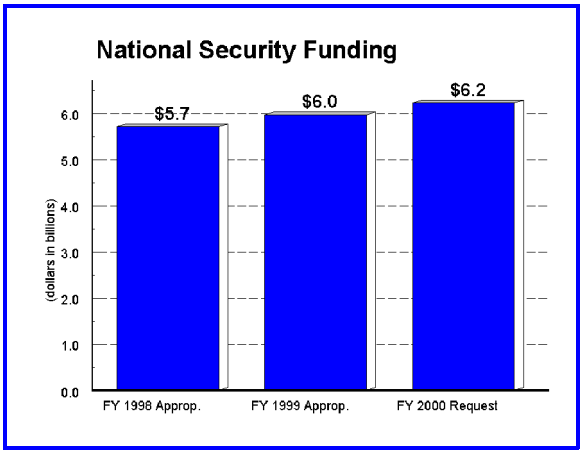
This program supports research with very real and practical daily applications, as evidenced by the work being performed by DOE scientists from Brookhaven National Laboratory in New York, who are part of a team testing a European epilepsy drug for use by smokers wanting to kick the habit. The team's research suggests the drug blocks the effects of nicotine on the brain and might also prove useful in fighting a variety of other addictions. In treating smokers, an appropriate dose of the medication taken before nicotine exposure can completely block nicotine's effects on chemicals in the brain.

This program also supports research important in the fight against cancer; for example, DOE's Pacific Northwest National Laboratory, in Washington State, has entered into a partnership with private industry to bring yttrium-90, a promising new medical isotope, to market. The isotope is being investigated to treat a number of cancers, including lung, breast, ovarian, colon, prostate, brain and non-Hodgkins lymphoma. The treatment consists of attaching the isotope to a specially engineered antibody that seeks out cancer cells within the body. Once attached, beta particles emitted from the isotope destroy the cancerous cells while sparing normal surrounding tissue. Based on clinical trial schedules, the isotope is about three to four years from full FDA approval for cancer treatment.

National Security: Addressing 21st Century Challenges

National Security — Investing for a Safer and Stronger America

The Department of Energy plays a critical role in preserving U.S. national security by its management of the nation's nuclear arsenal and its unique technical expertise in support of the Department of Defense, State Department, and other government agencies which are focused on reducing global dangers from nuclear weapons and other WMD. DOE people are also working to improve international nuclear safety at reactors in the Former Soviet Union and reduce the dangers of weapons of mass destruction.



The FY 2000 budget request for National Security programs is $6,228.0 million, an increase of $244.0 million from the FY 1999 appropriation. The Department's work to preserve peace in the 21st Century focuses on maintaining the safety, security, and reliability of our nuclear weapons, advancing arms control and nonproliferation initiatives, and providing new reactors for the U.S. Navy.

The Department is constantly evolving to respond to the new challenges and threats of the post-Cold War era. This past year, DOE significantly modified its National Security programs, designating separate program areas
This reflects the critical requirement placed on DOE to monitor and counter the growing threats posed by foreign terrorist states, and organizations. The increased potential for attack using nuclear, radiological, chemical, biological or cyber weapons and nuclear proliferants means our domestic security is increasingly defined by our nation's ability to detect and counter these technologically advanced attacks. The Department's unique scientific talent and ability to create technologies to counter these threats necessitates that we do so. Highlights of our FY 2000 National Security activities include:

Stockpile Stewardship Program: The total FY 2000 request for Weapons Activities is $4,531.0 million, of which $2,286.2 million is for the Stockpile Stewardship Program (SSP). In full compliance with the Comprehensive Test Ban Treaty, our work to ensure the safety, security and reliability of our nuclear deterrent is being fulfilled without underground nuclear testing. To accomplish this, DOE's Office of Defense Programs has embarked on the SSP. One important element of the SSP is the *Accelerated Strategic Computing Initiative (ASCI)*, an aggressive program to produce state of the art supercomputers and associated applications, with a goal of reaching 100 TeraOps, or 100 trillion operations per second, by 2004. ASCI is providing the weapon simulation software, computers and user environments which allow the

national laboratories to run simulations, backed with experimental facilities, to make critical decisions affecting the nuclear weapons stockpile without nuclear testing. This will provide scientists the tools needed to understand the aging of weapons, to assess their reliability, predict when components should be replaced, and evaluate the implications of changes in materials and fabrication processes.

Along the road to this goal, this past year we put into operation the world's fastest computers, capable of 3 trillion operations per second. In laymen's terms, these supercomputers are able to perform the number of computations in one second which would take a person using a hand-held calculator 3 million years to do. DOE is requesting $542.5 million to continue this high priority initiative.

Another component of the Department's Stockpile Stewardship Program is construction of the *National Ignition Facility (NIF)* at the Lawrence Livermore National Laboratory, in California, for which DOE is requesting $254.0 million in FY 2000. This 192-laser beam facility will allow us to study the physics of nuclear weapons by producing brief bursts of self-sustaining fusion reactions. In addition to its national security applications, NIF will advance mankind's knowledge in basic science.

Stockpile Management Program: In FY 2000, we are requesting $2,071.5 million for Stockpile Management activities. Within this request is $170.0 million for the Tritium Program is a limited life-span material essential to the operation of nuclear weapons. The continued viability of our nation's nuclear weapons stockpile requires a sufficient supply of new tritium to replace existing material as it deteriorates. In December 1998, Secretary Richardson selected the option of purchasing irradiation services from TVA's Watts Bar and Sequoyah reactors to produce tritium for defense purposes rather than constructing a linear accelerator or completing TVA's unfinished Bellefonte reactor. Based on proven technology and existing facilities, this option was the most technically mature, economical, and flexible. In announcing his decision, the Secretary stated: "it's the only option that doesn't require a large capital expenditure. If our goal of reaching further arms reduction agreements is reached, we may not need to exercise this option for many years and we will pay for tritium only when it is needed." Additional design work will also continue on the accelerator option to develop it as a "back-up" capability, consistent with the dual-track strategy announced by the Department in December of 1995.

Nonproliferation and National Security: The FY 2000 request for these programs is $747 million, up from $671 million in FY 1999. Separately, we are requesting $36.1 million for program activities and $31.2 million ($18.6 in new budget authority) for program activities.

Within the Nonproliferation and National Security request is $221.0 million for *Nonproliferation Research and Development*. Programs supported by this funding will use our national laboratories to develop technologies for detecting nuclear explosions, detecting the production of WMD, locating and tracking weapons of mass destruction, countering chemical and biological weapons released in the civilian environment, preventing nuclear smuggling and aiding Federal, State and local law-enforcement. For example, in 1998, DOE's Lawrence Livermore National Laboratory's Forensic Science Center began a new partnership with the FBI to fight terrorism with technology. The lab will provide the FBI with technologies to counter the threat of WMD. An instrument developed by Livermore will allow investigators at a crime scene to identify potentially toxic or lethal chemicals. Another technology is a new field sampling kit that will address the threat from the recent surge in

terrorist hoax chem-bio attacks by allowing law enforcement personnel to quickly identify nuclear, chemical and biological agents without touching the material.

We also are requesting $30.0 million for the *Initatives for Proliferation Prevention* program and $30.0 million for the *Nuclear Cities Initiative*. Many of Russia's experienced nuclear scientists and technicians are not receiving paychecks for sustained periods of time but their weapons skills are highly sought after by rogue nations and terrorist organizations. These programs are helping provide civilian employment for these displaced weapons workers in the ten Russian closed nuclear cities and will further assist the Russian Federation in reducing the size of its nuclear weapons complex.

For example, DOE and the Russian Ministry of Atomic Energy (MINATOM) completed upgrades to security systems protecting highly enriched uranium at two sites in Russia. The nuclear material protection technology and advanced material control and accounting systems installed there significantly reduce the risk of unauthorized use, theft, or diversion of nuclear materials.

Fissile Materials Disposition: For FY 2000, a total of $200 million is requested to provide verifiable storage and irreversible disposition of U.S. weapons-usable highly enriched uranium and plutonium. This program also provides the technical basis for similar actions by the Russians in the disposition of their surplus plutonium from weapons.

The Department recently announced the selection of Savannah River as the preferred site for its *Pit Disassembly and Conversion Facility*, for which an initial amount of $28.8 million is requested in the FY 2000 budget. A pit disassembly and conversion facility would begin, for the first time in history, the process of destroying instead of creating weapons-grade plutonium. Nuclear weapons components would be disassembled and the recovered plutonium would be converted to an oxide form suitable for disposition, either through immobilization or mixed oxide fuel (MOX) for reactors. This facility is to be designed and constructed from 1999 to 2004, with production operations beginning in 2005. Construction and operation are contingent on reaching an agreement with Russia on plutonium disposition.

The Department also selected Savannah River as its preferred location for two other facilities: the *Mixed Oxide Fuel (MOX) Fabrication Facility* ($12.4 million in FY 2000) to put plutonium oxide into a form suitable for burning in domestic, commercial reactors; and a plant to immobilize plutonium in ceramic surrounded by vitrified high level waste ($21.8 million in FY 2000).

Other Programs: A total of $30.0 million is requested for the Worker and Community Transition program, which mitigates contractor workforce restructuring impacts on workers and communities related to the defense mission. For Naval Reactors, $665.0 million is requested to continue providing safe, reliable, and long-lived nuclear propulsion plants to the U.S. Navy. Funds requested for both these programs are near their FY 1999 appropriation levels.

Energy Resources: Secure Supplies of Clean, Affordable, Energy

Energy Resources — Investing in Cleaner Fuel Options and Increased Efficiency

Preserving America's energy security remains among DOE's most important responsibilities. The vast majority of America's energy comes from fossil fuels. In fact, nearly 85 percent of this country's energy is supplied by coal, oil and natural gas. The availability of reliable,

reasonably-priced energy is a key component for guaranteeing America's continued economic growth.

The FY 2000 operating budget request for energy resource programs totals $2,341.0 million, which does not include the offset of $246 million in deferred Clean Coal Technology funds. This is an increase of $213.0 million over the FY 1999 level. Energy Resources business line includes all programs within the Department's Energy Efficiency and Renewable Energy, Fossil Energy, Nuclear Energy, as well as the Power Marketing, and Energy Information Administration programs.

Climate Change Technology Initiative (CCTI)
Departmental Crosscut

(dollars in thousands)

	FY 1998 Current Appropriation	FY 1999 Current Appropriation	FY 2000 Request	$ Change	% Change
Energy & Water Development					
Energy Supply:					
Solar and Renewable	269,904	336,000	398,921	62,921	18.7%
Nuclear Energy	—	—	5,000	5,000	100.0%
Total, Energy Supply	269,904	336,000	403,921	67,921	20.2%
Science	—	13,500	33,000	19,500	144.4%
Total, Energy & Water	269,904	349,500	436,921	87,421	25.0%
Interior and Related Agencies					
Energy Conservation R&D	450,215	525,701	646,515	120,814	23.0%
Fossil Energy R&D	—	23,890	36,776	12,886	53.9%
Energy Information Administration	—	2,500	3,000	500	20.0%
Total, Interior and Related Agencies	450,215	552,091	686,291	134,200	24.3%
Total, DOE	720,119	901,591	1,123,212	221,621	24.6%

If current energy supply and use patterns persist, without the development of new technologies to burn fuels in a cleaner manner or replacement of aging infrastructures, we could face runaway increases in harmful emissions. The options developed by DOE's energy programs, however, provide the very real prospect of cleaner energy production, even with increased energy usage. The FY 2000 budget continues R&D activities in new natural gas and coal-fired electric power technologies, advanced generation fuel cells, and ultra-high efficiency gas turbines to significantly reduce emissions.

Research, development, and accelerated use of energy efficient and clean energy technologies are major elements of the solution to global climate change. In fact, a technology path built upon a solid foundation of advanced science and basic research is so important to meeting those challenges that, even without the threat of global climate change, these investments would still be wise national policy to increase energy security, improve air quality, and strengthen national economic competitiveness. This exact point was made in a 1997 report by the *President's Committee of Advisors on Science and Technology (PCAST)* and is reflected in the President's *Climate Change Technology Initiative (CCTI)*. Various organizations in the Department participate in crosscutting efforts to accelerate the research, development, demonstration, and deployment of energy efficient and clean technologies. DOE is proposing a broad and balanced R& D technology deployment portfolio that includes: advanced clean renewable and fossil energy production; carbon sequestration; energy efficiency applications in the building, industry, and transportation sectors; support for basic and applied sciences; targeted programs for baseline measurement and tracking of greenhouse gas emissions; and

nuclear energy plant optimization. The budget includes a 24.5 percent increase in support of these CCTI programs.

Energy Security: As the world's largest consumer of fossil fuels, America uses 18.6 million barrels of oil each day, importing nearly half of this, 9.1 million barrels per day. As America learned during the oil embargo of 1973, our entire economy could be thrown into turmoil if our oil supplies were interrupted unexpectedly.

Today's world-wide near record-low oil prices have adversely impacted domestic oil production, as well as increased U.S. oil consumption, which are resulting in greater dependency on oil imports. We have prepared for disruptions of imports by storing 561 million barrels in the *Strategic Petroleum Reserve*. The *Strategic Petroleum Reserve* reduces U.S. vulnerability to the economic, national security, and foreign policy consequences of petroleum supply disruptions. The FY 2000 budget provides $164 million to operate the Reserve without relying on the sale of oil.

Fossil Energy R&D: The FY 2000 request for Fossil Energy R&D is $364.0 million which includes the use of $11.0 million in prior year balances to provide an FY 2000 operating budget of $375.0 million. The mission of this program is to stimulate sustainable development and utilization of the nation's fossil fuel resources and technologies to assure ample, secure, clean and low cost domestic supplies of energy.

One of the key components of the Department's FY 2000 Fossil Energy R&D request is support for development of the *Vision 21 Powerplex* -- the power plant of the future. This includes modular technologies that could be integrated into a non-polluting energy producing facility, such as revolutionary membranes for low-cost separation of oxygen and other gases. A related effort is the increasing emphasis on approaches for sequestering carbon dioxide, the most important greenhouse gas. The oil program includes efforts to piggy-back on past successes by revisiting several high-priority reservoir classes where field tests have revealed production issues amenable to improved technology. In natural gas-related efforts, the advanced gas turbine and next-generation stationary fuel cells are moving closer to commercial readiness, while on the supply side, new sources of gas are being investigated, including the nearly limitless gas trapped in methane hydrates.

Energy Efficiency: The FY 2000 request includes $837.5 million, an increase of $146.0 million over FY 1999, for energy efficiency programs to promote innovative R&D and deployment programs in the industrial, transportation, building, and federal energy use sectors. Within this request is $191.0 million for State Weatherization, State Energy and community partnership grants.

Among the most exciting activities supported by this request is the *Partnership for a New Generation of Vehicles (PNGV)* which continues the innovation of technological advances, designing more efficiency into today's existing fleet of automobiles. By 2004, this program's goal is to develop a prototype vehicle that triples the gas mileage of today's passenger vehicles. An example of progress being made is a cost-sharing initiative with private industry to develop a smarter, smaller and less expensive electric power system for the "car of the future." These power systems already have been reduced from the size of a large suitcase to less than half the size of a shoe box. This initiative seeks to reduce their $10,000 cost to less than $500.

Renewable Energy: The FY 2000 request for Renewable Energy programs totals $398.9 million, an increase of $63.0 million over the FY 1999 level. Our Renewable Energy

programs are designed to help improve the performance and reduce the costs of a broad range of renewable electric, fuel and related storage and power delivery technologies.

For example, in the *Electric Energy Storage Program*, a decade-long investment into developing high temperature superconductor (HTS) power cable technology to deliver electricity in a utility network is moving toward commercialization. Detroit Edison will begin using the cable in 2000, opening the gateway to the electricity superhighway of the future. The new light-weight cable will replace existing copper cables in urban settings, much the same as fiber optic cables have been replacing copper communications cables. Superconducting technology offers the potential to save America's utility customers more than $6 billion annually by cutting losses in power delivery while reducing greenhouse gases associated with generating electricity.

Another example of renewable energy activities supported by this request is within the *Biomass Energy* program. The Department and private industry broke ground in 1998 for a waste-to-ethanol plant in Louisiana, to demonstrate converting wastes produced from sugar refining into ethanol, a "clean burning" transportation fuel and industrial chemical.

Nuclear Energy: The FY 2000 request for Nuclear Energy programs is $269.3 million. The Department's Nuclear Energy programs promote secure, competitive, and environmentally responsible technologies that serve the present and future needs of the United States. A featured program within this request is $25.0 million for the *Nuclear Energy Research Initiative*. The NERI program supports peer-reviewed research and development in the areas of proliferation-resistant reactor and fuel technologies, nuclear safety and risk analysis, advanced lower power reactor designs and applications, and advanced nuclear fuel technologies that address the future of existing nuclear energy reactors. This research, conducted by America's universities, laboratories, and industry can help address the challenging technical issues associated with nuclear power that have impeded its expansion as an energy source for the long-term.

Complementing the NERI program, is a new initiative focused on the development of advanced technologies that help assure the safe and efficient operation of existing nuclear power plants -- the *Nuclear Energy Plant Optimization (NEPO)* program. The NEPO program will be conducted in cost-shared cooperation with industry to carry out the joint DOE-Electric Power Research Institute Strategic Research and Development Plan for operating nuclear power plants. This research is focused on development of technologies that increase plant efficiency and measure and mitigate the aging of key components.

Also within the nuclear energy program request is $21.0 million for *Isotope* programs to provide for development, production and distribution of isotopes that are vital to medical, research, and industrial applications. As we enter the next century, we will continue to pursue opportunities to transfer responsibility for the commercial aspects of production and distribution to the private sector, focusing the Department's production on important research isotopes that may someday prove vital in the fight to cure cancer and other diseases. The Department will advance this cause through our new *Advanced Nuclear Medicine Initiative*, which will help apply the Department's unique expertise to develop new medical isotope technologies.

Environmental Quality: Accelerating Progress, Meeting Commitments

Environmental Quality — Focusing on Completion, Closure, and Cleanup

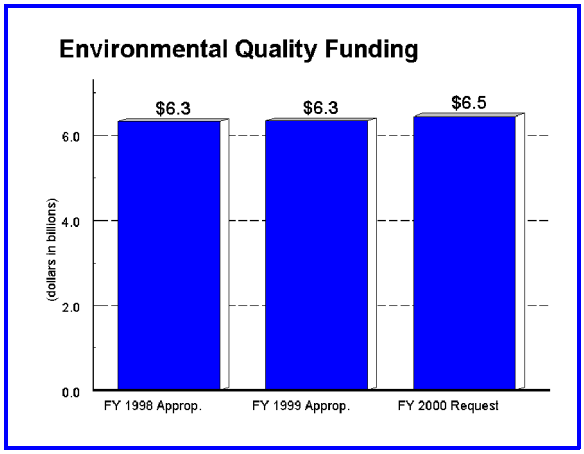
The Department is taking an aggressive approach to address the immediate and long-term environmental and health risks of the Department's former weapons production complex and resolve the issues surrounding spent nuclear fuel storage.

In FY 2000, the Department is requesting $6,452.0 million for Environmental Quality programs. This request focuses resources toward the closure of sites and completion of projects with a targeted approach to cleanup. The FY 2000 request will enable the Department to address the highest human health, safety, and environmental risks within the Department of Energy complex. It will also enable the Department to continue its real progress toward answering some of the most critical questions in the area of long-term nuclear waste disposal.

Environmental Management: The Department of Energy manages the largest environmental cleanup program in history. About one-third of our annual Departmental budget is dedicated to restoring contaminated lands and managing the waste produced during the Cold War.

Developing the atomic weapons that helped to end World War II, and provided the nation's nuclear deterrent during the years of conflict with the Soviet Union, left a legacy of unique and urgent environmental problems in unprecedented volumes of contaminated soil and water, radiological hazards, and a vast number of contaminated structures and materials.

For our Environmental Management (EM) programs, we are requesting a total of $5.928.0 million. This amount would enable each cleanup site to meet its safety and legal requirements, support our goals for accelerated cleanup and site closure, and maintain other critical environmental projects and priorities. It is nearly $100 million higher than in FY 1999.



Of this amount, $228.0 million is requested to continue the Department's *EM Privatization Initiative* begun in FY 1997 in pursuit of alternative financing mechanisms for several of the Department's large scale environmental cleanup design and construction activities. Under the privatization approach, many of the technical and performance risks are shifted to the private contractor, creating greater incentives to complete projects on time and within budget. This contracting approach will also bring private sector efficiencies, and new technology to the Department's cleanup program.

The FY 2000 request includes advanced appropriations for fiscal years 2001 - 2004 for the Tank Waste Remediation System project to ensure that there is broad financial community interest in participating in this project.

Radioactive Waste Management: The Department achieved significant progress this past year in its Civilian Radioactive Waste Management (CRWM) program, completing the Yucca Mountain Viability Assessment. The study assembled what is known about the site, the preliminary design of a repository, how the site and the design would work together, and identified questions that remain to be answered. The document indicated the Department needs to continue to study Yucca Mountain so that the Secretary of Energy can decide in 2001 whether to recommend the site to the President. For FY 2000, DOE is requesting $409.0

million ($370.0 million in new budget authority), an increase of $52.0 million over the FY 1999 level. These funds will support: continued data synthesis and analysis; model validation; refinement of engineering and designs necessary for major upcoming decision documents; completing the Final Environmental Impact Statement and Record of Decision in 2000; and, if the site is suitable, a Site Recommendation to the President in 2001, and a License Application to the Nuclear Regulatory Commission in 2002.

Environment, Safety and Health: For programs within the Office of Environment, Safety, and Health, DOE is requesting $163.0 million (with prior year balances) an increase of $14.0 million over the FY 1999 level. The budget includes $13.5 million for its commitment to the Radiation Effects Research Foundation. We also propose $20.0 million for other Health Studies programs, including epidemiological studies and occupational medicine.

Changing the Way We Do Business

Managing for Results

Working with Congress, the Department continues to improve its management. In 1995, the Department began a comprehensive effort to downsize its operations and streamline procedures. The goal was to accomplish a 25 percent reduction in federal staffing by the end of FY 2000. As of January of this year, the Department has met that goal -- almost two years ahead of schedule. Our contractor employment has also come down significantly, and, as of the end of 1998, contractor employment is 31 percent lower than in 1992.

The downsizing of the federal workforce has left gaps in critical skill areas throughout the Department. To address this, in December 1998, Secretary Richardson announced a targeted effort to bring specialized skills into the Department as part of a *Workforce 21* initiative. *Workforce 21* will enable DOE to hire highly skilled workers in critical areas to restore strength where shortages have developed through attrition.

The Department is taking a number of additional steps to strengthen its management and performance, including:

- developing and defining DOE's R&D portfolio to ensure it takes full advantage of interrelationships among R&D projects among different program areas;
- establishing rigorous procedures for improved efficiency in Management and Operating (M&O) contractor employee assignments to the D.C. area.
- conducting external independent reviews of DOE's construction projects, with a complementary on-going study of overall management and the facilities acquisition process;
- conducting a review of the management structure throughout DOE before making a final decision on the proposal to consolidate contracts at defense production facilities; and
- increasing the effective use of the Department's new Contract Reform and Privatization Office.

The Department's FY 2000 preliminary Performance Plan, in accordance with the Government Performance and Results Act (GPRA), is submitted separately from these budget highlights. This law requires that federal budgets, beginning in FY 1999, be developed from a strategic planning process and contain performance-based results for proposed spending requests. The Performance Plan identifies specific measures of success which directly tie to the requested program levels.

The Department of Energy has been using strategic planning and performance-based budgeting since the beginning of the Clinton Administration, enabling this budget to begin implementation of the provisions of GPRA to manage federal taxpayer dollars more effectively. This budget was developed by linking the Department's strategic planning process to performance-based planning and budget proposals. Decisions on how best to invest taxpayer funds are based on which programs deliver the most beneficial results and accomplish the President's strategic objectives.

Detailed Budget Summary

The following sections, organized by appropriation, discuss in detail our proposed FY 2000 budget request which is a strong portfolio of investments for a better future. The FY 2000 budget request is prepared on a comparable basis. This means that the FY 1998 and FY 1999 amounts are adjusted to reflect the FY 2000 budget structure. The FY 2000 budget request and Performance Plan implement our strategic objectives and provide the Congress and the American people with information on the real results we propose to achieve with this request.

Summary by Business Line

	FY 1998 Comparable Approp.	FY 1999 Comparable Approp.	FY 2000 Request to Congress	FY 2000 vs. FY1999	
Business Lines					
Environmental Quality					
Environmental Management	5,621,114	5,603,619	5,700,000	96,381	1.7%
EM privatization	200,000	228,357	228,000	-357	-0.2%
Civilian Radioactive Waste Mgmt.	345,696	357,477	370,000	12,523	3.5%
Environment, Safety and Health	156,895	148,820	154,050	5,230	3.5%
Total, Environmental Quality	**6,323,705**	**6,338,273**	**6,452,050**	**113,777**	**1.8%**
National Security					
Defense Programs	4,142,572	4,400,000	4,531,000	131,000	3.0%
Nonproliferation & Nat'l Security	698,207	670,762	747,300	76,538	11.4%
Fissile Materials Disposition	103,677	167,491	200,000	32,509	19.4%
Worker and Community Transition	61,148	28,202	30,000	1,798	6.4%
Naval Reactors	670,352	666,140	665,000	-1,140	-0.2%
Total, National Security	**5,718,056**	**5,984,295**	**6,228,000**	**243,705**	**4.1%**
Science and Technology					
Science	2,469,495	2,567,860	2,541,393	-26,467	-1.0%
Spallation Neutron Source	23,000	130,000	214,000	84,000	64.6%
Scientific Simulation Plan	——	——	70,000	70,000	——
Science Education	——	——	10,000	10,000	——
Technical Information Management	10,032	8,409	9,100	691	8.2%
Total, Science and Technology	**2,502,527**	**2,706,269**	**2,844,493**	**138,224**	**5.1%**
Energy Resources					
Energy Efficiency & Renewable Energy	854,258	963,701	1,235,615	271,914	28.2%
Fossil Energy	568,517	552,876	317,000	-235,876	-42.7%
Nuclear Energy	242,696	263,382	269,305	5,923	2.2%
Power Marketing Administrations					
Alaska Power Administration	13,500	——	——	——	——
Southeastern	11,612	7,500	-773	-8,273	-110.3%
Southwestern	25,820	26,000	27,940	1,940	7.5%
Western Area	191,717	203,000	171,471	-31,529	-15.5%
Falcon & Amistad operating & maint.	970	1,010	1,309	299	29.6%
Total, Power Marketing Administrations	243,619	237,510	199,947	-37,563	-15.8%
Energy Information Administration	66,800	70,500	72,644	2,144	3.0%
Total, Energy Resources	**1,975,890**	**2,087,969**	**2,094,511**	**6,542**	**0.3%**
Total, Business Lines	**16,520,178**	**17,116,806**	**17,619,054**	**502,248**	**2.9%**
Russian plutonium disposition	——	200,000	——	-200,000	-100.0%
Russian uranium disposition	——	325,000	——	-325,000	-100.0%
Other	338,816	214,586	222,960	8,374	3.9%
Total, Department of Energy	**16,858,994**	**17,856,392**	**17,842,014**	**-14,378**	**-0.1%**
DOE Civilian programs (250/270 function) funding	*(5,304,664)*	*(5,475,641)*	*(5,657,846)*	*(182,205)*	*(3.3%)*
DOE Defense (050 function) funding	*(11,554,330)*	*(12,380,751)*	*(12,184,168)*	*(-196,583)*	*(-1.6%)*

Summary by Appropriation Account

	FY 1998 Comparable Approp.	FY 1999 Comparable Approp.	FY 2000 Request to Congress	FY 2000 vs. FY1999	
Energy and Water Development					
Energy Supply	758,899	770,053	841,888	71,835	9.3%
Uranium Supply & Enrichment	-3,535	——	——	——	——
Non-Defense Environmental Management	463,454	431,200	330,934	-100,266	-23.3%
Uranium Enrichment D&D Fund	230,200	220,200	240,198	19,998	9.1%
Science	2,483,573	2,697,860	2,835,393	137,533	5.1%
Departmental Administration	133,280	111,572	123,490	11,918	10.7%
Inspector General	27,500	29,000	30,000	1,000	3.4%
Atomic Energy Defense Activities					
Weapons Activities	4,146,692	4,400,000	4,531,000	131,000	3.0%
Defense Env. Restoration & Waste Mgmt.	4,319,575	4,320,567	4,505,676	185,109	4.3%
Defense Facilities Closure Projects	995,885	1,041,740	1,054,492	12,752	1.2%
EM privatization	200,000	228,357	228,000	-357	-0.2%
Other Defense Activities	1,702,178	2,201,087	1,792,000	-409,087	-18.6%
Defense Nuclear Waste Disposal	190,000	189,000	73,000	-116,000	-61.4%
Total, Atomic Energy Defense Activities	11,554,330	12,380,751	12,184,168	-196,583	-1.6%
Power Marketing Administrations	243,619	237,510	199,947	-37,563	-15.8%
Federal Energy Regulatory Commission	——	——	——	——	——
Nuclear Waste Disposal Fund	156,000	169,000	297,000	128,000	75.7%
Geothermal Resources Development Fund	——	——	-821	-821	——
Total, Energy and Water Development	**16,050,855**	**17,047,146**	**17,082,197**	**35,051**	**0.2%**
EWD Civilian programs (250/270 functions) funding	*(4,496,525)*	*(4,666,395)*	*(4,898,029)*	*(231,634)*	*(5.0%)*
EWD Defense (050 function) funding	*(11,554,330)*	*(12,380,751)*	*(12,184,168)*	*(-196,583)*	*(-1.6%)*
Interior and Related Agencies					
Fossil Energy Research & Development	356,517	384,056	364,000	-20,056	-5.2%
Alternative Fuels Production	-1,500	-1,300	-1,000	300	23.1%
Naval Petroleum & Oil Shale Reserves	107,000	14,000	——	-14,000	-100.0%
Elk Hills school lands fund	——	36,000	36,000	——	——
Energy Conservation	584,354	627,701	837,515	209,814	33.4%
Economic Regulation	2,725	1,801	2,000	199	11.0%
Strategic Petroleum Reserve	207,500	160,120	164,000	3,880	2.4%
Energy Information Administration	66,800	70,500	72,644	2,144	3.0%
Clean Coal Technology	-101,000	-40,000	-246,000	-206,000	-515.0%
Total, Interior and Related Agencies	**1,222,396**	**1,252,878**	**1,229,159**	**-23,719**	**-1.9%**
UE D&D Fund discretionary payments	-388,000	-398,088	-420,000	-21,912	-5.5%
Excess FERC receipts	-10,159	-29,446	-28,342	1,104	3.7%
Colorado River Basin	-16,098	-16,098	-21,000	-4,902	-30.5%
Total, Department of Energy	**16,858,994**	**17,856,392**	**17,842,014**	**-14,378**	**-0.1%**
DOE Civilian programs (250/270 function) funding	*(5,304,664)*	*(5,475,641)*	*(5,657,846)*	*(182,205)*	*(3.3%)*
DOE Defense (050 function) funding	*(11,554,330)*	*(12,380,751)*	*(12,184,168)*	*(-196,583)*	*(-1.6%)*

Crosswalk from Appropriation Structure to Business Line

	FY 2000 Request to Congress	Environ-mental Quality	National Security	Science and Tech-nology	Energy Resources	Other
Energy and Water Development						
Energy Supply	841,888	50,750	——	9,100	668,226	113,812
Non-Defense Environmental Management	330,934	330,934	——	——	——	——
Uranium Enrichment D&D Fund	240,198	240,198	——	——	——	——
Science	2,835,393	——	——	2,835,393	——	——
Departmental Administration	123,490	——	——	——	——	123,490
Inspector General	30,000	——	——	——	——	30,000
Atomic Energy Defense Activities						
Weapons Activities	4,531,000	——	4,531,000	——	——	——
Defense Env. Restoration & Waste Mgmt.	4,505,676	4,505,676	——	——	——	——
Defense Facilities Closure Projects	1,054,492	1,054,492	——	——	——	——
EM privatization	228,000	228,000	——	——	——	——
Other Defense Activities	1,792,000	92,000	1,697,000	——	——	3,000
Defense Nuclear Waste Disposal	73,000	73,000	——	——	——	——
Total, Atomic Energy Defense Activities	12,184,168	5,953,168	6,228,000	——	——	3,000
Power Marketing Administrations	199,947	——	——	——	199,947	——
Nuclear Waste Disposal Fund	297,000	297,000	——	——	——	——
Geothermal Resources Development Fund	-821	——	——	——	-821	——
Total, Energy and Water Development	**17,082,197**	**6,872,050**	**6,228,000**	**2,844,493**	**867,352**	**270,302**
EWD Civilian programs (250/270 functions) funding	*(4,898,029)*	*(918,882)*	——	*(2,844,493)*	*(867,352)*	*(267,302)*
EWD Defense (050 function) funding	*(12,184,168)*	*(5,953,168)*	*(6,228,000)*	——	——	*(3,000)*
Interior and Related Agencies						
Fossil Energy Research & Development	364,000	——	——	——	364,000	——
Alternative Fuels Production	-1,000	——	——	——	-1,000	——
Elk Hills school lands fund	36,000	——	——	——	36,000	——
Energy Conservation	837,515	——	——	——	837,515	——
Economic Regulation	2,000	——	——	——	——	2,000
Strategic Petroleum Reserve	164,000	——	——	——	164,000	——
Energy Information Administration	72,644	——	——	——	72,644	——
Clean Coal Technology	-246,000	——	——	——	-246,000	——
Total, Interior and Related Agencies	**1,229,159**	**——**	**——**	**——**	**1,227,159**	**2,000**
UE D&D Fund discretionary payments	-420,000	-420,000	——	——	——	——
Excess FERC receipts	-28,342	——	——	——	——	-28,342
Colorado River Basin	-21,000	——	——	——	——	-21,000
Total, Department of Energy	**17,842,014**	**6,452,050**	**6,228,000**	**2,844,493**	**2,094,511**	**222,960**
DOE Civilian programs (250/270 function) funding	*(5,657,846)*	*(498,882)*	——	*(2,844,493)*	*(2,094,511)*	*(219,960)*
DOE Defense (050 function) funding	*(12,184,168)*	*(5,953,168)*	*(6,228,000)*	——	——	*(3,000)*

Energy Supply

The Energy Supply appropriation accounts support a variety of energy research and applied technology programs as well as programs providing environmental oversight and mitigation. Organizations with programs supported by this appropriation include Solar and Renewable Resources Technologies; Nuclear Energy; Environment, Safety and Health; Technical Information Management; Field Management; and Oak Ridge Landlord.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Energy Supply					
Solar and renewable resources technologies	338,655	383,905	446,021	62,116	16.2%
Nuclear energy	250,917	266,928	269,305	2,377	0.9%
Environment, safety & health	65,268	50,398	50,750	352	0.7%
Technical information management	10,100	8,600	9,100	500	5.8%
Field operations	95,000	104,127	102,000	-2,127	-2.0%
Oak Ridge Landlord	11,000	11,000	11,812	812	7.4%
Other	68,932	1,000	——	-1,000	-100.0%
Subtotal, Energy Supply	839,872	825,958	888,988	63,030	7.6%
Use of prior year balances & other adjustments	-80,973	-55,905	-47,100	8,805	-15.7%
Total, Energy Supply	758,899	770,053	841,888	71,835	9.3%
Full time equivalent employment (FTEs)	*1,456*	*1,609*	*1,337*	*-272*	*-16.9%*

Solar and Renewable Resources Technologies

Mission

The mission of the Office of Energy Efficiency and Renewable Energy (EERE) is to work with its customers to produce a stronger economy, a cleaner environment, and a more secure future by developing and deploying energy efficient and renewable energy technologies that meet the needs of the public and the marketplace.

Program Overview

To fulfill its mission, EERE supports research and development efforts in energy efficiency and renewable technologies in the utility, building, transportation, and industry sectors.

EERE is funded by the Energy Supply and Energy Conservation appropriation accounts. The activities provided as part of the annual Energy and Water Development Appropriations Bill will be discussed in this section. Programs supported by the Energy Conservation appropriation will be discussed in the section on programs within the Interior and Related Agencies Appropriations Bill.

Energy Supply

The Energy Supply programs of EERE funded by the Energy and Water Development Appropriations Subcommittee are designed to improve the performance and reduce the costs of a broad range of renewable electric, fuel, and related storage and power delivery technologies. Included are programs on alternative transportation fuels, solar buildings, photovoltaic, concentrating solar power, biomass, wind energy, geothermal, hydroelectric power systems, hydrogen, energy storage, high temperature superconductivity, programs to address the power needs of remote and Native American lands, power systems reliability, and electricity restructuring. The technologies advanced under these programs will be the building blocks of cleaner, more flexible energy systems of the future.

EERE's programs work as voluntary cost-shared partnerships with the nation's utilities, industries, states, and the public to advance the development and deployment of clean and efficient energy technologies. By advancing research and development and deployment activities, DOE's ultimate objectives are to reduce the cost and improve the performance of renewable energy technologies. By encouraging the development of new markets, EERE's solar and other renewable energy programs diversify sources of electricity and fuel supply, help to improve the environment, and promote U.S. economic growth and job creation.

In its 1997 review of the national energy R&D portfolio, the President's Committee of Advisors on Science and Technology recommended the expansion of a number of national energy R&D programs—renewable energy programs being among the highest priorities for increased funding. The Committee noted that renewable energy technologies provide multiple benefits, including air emission reductions and reduced dependence on imported oil. Crediting DOE with remarkable gains in technology performance and cost reductions, the Committee called for significant expansion of renewable energy R&D programs in order to meet the economic and environmental challenges of the 21st Century.

Budget Overview

In FY 2000, Solar and Renewable Resources Technologies (EERE only) is requesting $398.1 million in the Energy Supply appropriation and is also planning to use $0.8 million in prior year balances from the Geothermal Resources Development Fund for a total program level of $398.9 million. The $62.9 million increase in Energy Supply represents a 18.7 percent increase over the FY 1999 enacted level. This increase reflects the Administration's support of Solar and Renewable Resource Technology Programs to reduce air pollution, improve U.S. energy security, address global climate change, and increase our nation's economic competitiveness. The FY 2000 Budget Request supports the President's Climate Change Technology Initiative.

The FY 2000 budget request for EERE's Solar and Renewable Energy program funds a balanced portfolio of high priority technology research and development as well as deployment activities which are heavily cost-shared by industry.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Solar and Renewable Resources Technologies					
Solar Energy					
Solar building technology research	2,625	3,600	5,500	1,900	52.8%
Photovoltaic energy systems	64,691	72,200	93,309	21,109	29.2%
Concentrating Solar Power	16,317	17,000	18,850	1,850	10.9%
Biomass/Biofuels energy systems	58,116	73,200	92,391	19,191	26.2%
Wind energy systems	32,128	34,771	45,600	10,829	31.1%
Renewable energy production incentive program	2,954	4,000	1,500	-2,500	-62.5%
Solar program support*	——	——	10,000	10,000	——
International solar energy program	1,375	6,350	6,000	-350	-5.5%
National renewable energy laboratory	3,200	3,900	1,100	-2,800	-71.8%
Total, Solar Energy	181,406	215,021	274,250	59,229	27.5%
Geothermal	28,694	28,500	29,500	1,000	3.5%
Hydrogen research	15,806	22,250	28,000	5,750	25.8%
Hydropower	729	3,250	7,000	3,750	115.4%
Renewable Indian energy resources*	3,939	4,779	——	-4,779	-100.0%
Electric energy systems and storage	43,262	40,100	41,000	900	2.2%
Federal building/remote power initiative*	4,864	4,000	——	-4,000	-100.0%
Program direction	15,651	18,100	19,171	1,071	5.9%
Renewable energy research program	44,304	47,905	47,100	805	1.7%
Subtotal, Solar and Renewable Resources Technologies	338,655	383,905	446,021	62,116	16.2%
Use of prior year balances & other adjustments	-68,751	-47,905	-47,100	+805	1.7%
Total, Solar and Renewable Resources Technologies	269,904	336,000	398,921	62,921	18.7%
Full time equivalent employment (FTEs)	*117*	*107*	*100*	*-7*	*-6.5%*

* Note: For FY 2000, the Solar Program Support activity combines the Renewable Indian energy resources and Federal building/remote power initiative activities.

The funding priorities of the Solar and Renewable program include Photovoltaic, Biomass/Biofuels, Wind, Electric energy systems and storage (primarily High Temperature Superconductivity) technologies.

- The Photovoltaic program in recent years has achieved numerous technological and cost reduction breakthroughs from which commercial applications are currently being realized. There is great industry interest in maintaining a strong R&D program to take these applications into the marketplace.
- The Biomass/Biofuels program has received similar interest and support from the utilities and transportation industry because these programs have demonstrated great potential in providing a real alternative energy resource for baseload power

production, and alternative transportation fuels that will be cost-competitive with fossil fuels.

- While the cost of producing electricity from wind has decreased dramatically in the last decade, further improvements are needed to close the cost gap between wind and fossil generated energy sources. The Wind program works directly with industry to provide U.S. wind companies with the technological advantage needed to capture a sizeable share of the multi-billion dollar, rapidly expanding worldwide market for wind energy.
- Within the Electric energy systems and storage program, the Department leads the national effort to capture the energy saving potential of high temperature superconductivity which will provide materials with 100 times the electricity carrying capacity of copper wire. The program has mobilized the resources of U.S. industries, national labs, and universities to solve the problems of manufacturing superconducting electrical wires and designing super-efficient electrical systems that use these wires. Superconductivity has the potential to bring about an energy revolution comparable to the introduction of fiber optics into the communications industry.

FY 2000 Budget Request

The FY 2000 budget level of $398.9 million supports the following major program activities:

Photovoltaic (PV) — $93.3 million

Most of the program's resources fund fundamental and applied research ($63.3 million), which is essential for continued progress towards long-term goals of improved performance and lower costs. Resources are also used to support competitive procurements for cost-shared projects with U.S. utilities and the photovoltaic industry. These cost-shared projects focus on two areas: 1) researching manufacturing process technologies **(PVMat** $16.0 million); 2) developing photovoltaic products that can be integrated into commercial and residential buildings **(PV:BONUS II** $5.0 million); and partnerships for technology introduction where new PV products are deployed in the field and validated in order to increase their acceptance ($6.0 million). In FY 2000, the program will develop a thirteen percent stable prototype thin film module; complete second year and begin the third year of Phase 5 **PVMat** contracts aimed at achieving cost reductions of 50 percent from 1996 levels; conduct research into breakthrough PV technologies; complete testing and verification of all utility and residential grid-tied PV systems installed through energy partnerships; complete Phase 3 prototype development /field verification contacts for **PV BONUS II**; and expand work on financing mechanisms, measurement and evaluation, technical standards and infrastructure under the Million Solar Roofs Initiative ($3.0 million).

Concentrating Solar Power — $18.9 million

The Concentrating Solar Power (CSP) Program works with U.S. industry to develop economically competitive CSP technologies which will improve the nation's energy security, reduce carbon emissions, and create jobs for U.S. workers. CSP technologies use various mirror configurations to concentrate the heat of the sun to produce electric power. In FY 2000, the CSP Program is focused on four paths: (1) developing high-reliability distributed power systems; (2) reducing the costs of dispatchable solar power; (3) developing advanced CSP components and systems, and (4) expanding strategic alliances and market awareness to ensure that R&D efforts are focused on the critical needs of U.S. industry.

Over the next five years, the CSP Program, with industry and user communities, aims to develop reliable distributed power systems (i.e., 4,000 hours between outages) and dispatchable power systems capable of producing power at 6-8¢/kWh. In FY 2000, the CSP Program will achieve 1,000 hours of trouble-free operation for a dish/engine system installed at a utility/industry test site in the U.S. Southwest; field an advanced solar dish/engine system on an Indian reservation in Arizona or New Mexico; develop advanced trough components that will enable a U.S. team to compete, both domestically and internationally; and conduct advanced research into high-temperature and high-efficiency system designs that will eventually be capable of achieving costs in the 4-6¢/kWh range.

Biomass/Biofuels — $92.4 million

The Biomass/biofuels program's goal is to develop cost-competitive technologies in two major areas: converting biomass resources into electric power production (Biomass $39.8 million) and converting biomass to liquid transportation fuels, mainly ethanol (Biofuels $53.4 million). Biomass/biofuels technology is pursued because: 1) it is a low-cost renewable baseload electric generation and gasoline alternative; 2) it will create jobs in rural areas through production of dedicated biomass feedstocks; and 3) it has two primary environmental benefits. First, the use of biomass/Biofuels reduces greenhouse gas emissions, since carbon released into the atmosphere is offset by carbon consumption during the biomass resource growing cycle. Secondly, the availability of cost-competitive biomass technology promotes the commercial use of agricultural and forest residues.

The goal of the Biomass program is to increase the viability of biomass technologies by achieving the addition of 3,000 MW of new biomass power capacity in the U.S. by 2010. In FY 2000, the program will successfully demonstrate the sustained operation of the total Vermont biomass system; complete the power plant retrofit for the co-firing switchgrass with coal project in Iowa; complete three co-firings with coal projects; and conduct preliminary testing of two to three small modular systems.

The Biofuels program intends to: develop and demonstrate technologies capable of producing ethanol at 72 cents per gallon by 2010; develop crop systems capable of providing reliable biomass feedstock supplies for the production of fuels, chemicals, and electricity; and explore opportunities to produce renewable fuels for heavy vehicle use by supporting biodiesel production activities. In FY 2000, the Biofuels program will successfully demonstrate conversion of agricultural wastes to ethanol on a small commercial scale in order to support commercial partners considering the production of ethanol and co-product and complete bench scale testing of a new lower cost process for the conversion of cellulose to ethanol.

Wind — $45.6 million

The wind program is working to reach a cost of wind-generated electricity of 2.5¢/kWh at sites with 15 mile-per-hour average winds by 2002. The program focuses R&D efforts on better understanding the complex aerodynamic phenomena involved in capturing energy from variable and turbulent winds to develop tools that help designers build more cost effective and reliable wind turbines. The program also works directly with industry in advanced technology development and verification projects to assist in moving research into commercial application. In FY 2000, the Wind Program will: complete installation and begin testing of prototypes under the Small Wind Turbine Project; complete the Near Term Research and testing project; initiate a new effort entitled Wind Partnerships for Advanced Component Technologies (WindPACT), which will further develop and test promising research and ideas

by establishing a joint team of industry and lab researchers; and complete the first year of operation of five field verification projects using smaller (100 kW) wind turbines.

Solar Program Support — $10.0 million

Solar Program Support is a consolidated program which consists of two components: Electricity Restructuring and Competitive Solicitation. The Electricity Restructuring program seeks to provide technical assistance to state officials and others about the potential effects of utility restructuring policies and regulations on the development and deployment of renewable and energy efficient technologies and programs. The Competitive Solicitation program is designed to combine the various activities previously conducted under two separate line items (the Renewable Indian Energy Resources and Federal Buildings/Remote Power Programs) into a single, integrated effort that provides highly cost-shared competitive awards to projects selected across a diverse range of geographic locations.

In FY 2000, the Electricity Restructuring program will support analysis of lessons learned in developing and deploying renewable and energy efficient technologies in restructured utility markets. The program will also provide technical assistance activities to state officials to ensure they have the most recent information on impacts of restructuring on renewable and energy efficient technologies. The Competitive Solicitation Program will select the initial round of renewable energy projects to be funded. These projects are intended to provide essential operational performance and reliability data on various clean renewable technology applications while benefitting the many remote and/or economically challenged regions of the nation, which have higher priced and/or unreliable power sources.

International Solar Energy Program — $6.0 million

The International Solar Energy Program's mission is to encourage the acceptance and use of U.S. renewable energy technologies by developed and developing countries in support of U.S. national interests and policies. The Office of Power Technologies (OPT) identifies and implements priority activities (working cooperatively with the private sector, federal agencies, and others) to advance technology development and deployment in the fastest growing and often most difficult-to-penetrate energy markets. Widespread use of U.S. energy efficiency and renewable energy technologies can help meet energy needs worldwide, reduce the rate of consumption of finite fossil energy resources, and address local and global environmental issues.

Activities will be prioritized and selected considering: U.S. strategic interests and policies; the DOE mission; leveraged funding; national, regional or global impacts; potential for replication; commitment from other-country partners; likely impact on U.S. market position; and other relevant factors. OPT activities focus on three areas: 1) emerging global environmental and energy issues ($2.5 million); 2) market and trade development ($2.5 million); 3) and energy and environmental security ($1 million). Emerging global environmental issues, such as climate change, will be addressed through the U.S. Initiative on Joint Implementation (USIJI).

In FY 2000, the International Solar Energy Program will: provide technical assistance to U.S. companies and key developing countries interested in participating in joint implementation and other flexibility mechanisms; co-sponsor two project development activities; accept 5-10 projects satisfying USIJI criteria; provide technical assistance and validation support to five projects initiated by the private sector or other parties in selected key countries; educate other agencies involved in disaster relief in the opportunities for using energy efficiency and

renewable energy technologies to meet humanitarian and economic redevelopment needs of disaster stricken communities; and provide technical assistance to one-to-two disaster relief efforts which demonstrate the benefits of energy efficiency and renewable energy technologies.

Geothermal — $29.5 million

Electric power from geothermal resources is delivered with few environmental impacts and has the highest reliability of base-load power from any source. Geothermal R&D efforts focus on: 1) locating and confirming undiscovered geothermal reservoirs; 2) reducing exploration and production drilling costs in hard rock environments; 3) developing advanced techniques for managing geothermal energy production; 4) enhancing the efficiency and reliability of converting geothermal heat into electricity; and 5) reducing operating and maintenance costs at existing and planned geothermal facilities. This program contributes to the goal of a life-cycle cost of producing electricity at 3.0¢/kWh by 2010 and will yield substantial increases in the amount of geothermal energy that can be economically recovered.

In addition to core R&D aimed at achieving continuous improvements in geothermal technology, three initiatives will begin to accelerate the pace of the program in FY 2000. The first initiative called Enhanced Geothermal System will focus on enhancing the productivity and lifetime of geothermal reservoirs through rock fracturing and stimulation techniques. The second initiative is the Geothermal Advanced Drilling System which aims to reduce the costs for drilling in deep, hard, hot rock environments. The third initiative involves development of modular power systems or small-scale, standardized generating units which can support mini-grids in remote applications.

Hydrogen Research and Development — $28.0 million

The Hydrogen program works with industry and universities to develop mid-term and long-term integrated hydrogen systems for power generation and transportation applications. The use of hydrogen as an energy source promises enormous environmental benefits as a near-zero emission fuel. Development of critical technologies to lower the cost of hydrogen production, storage and utilization is vital for the introduction of hydrogen into the energy infrastructure. The program facilitates the introduction of these technologies in high priority areas -- such as renewable/hydrogen electric generation systems, refueling stations for hydrogen vehicles and electricity for Native American villages and other remote locations. These crucial activities reduce dependency on expensive oil products, promote rural electrification, and economic development, and use grid-independent systems, while reducing NO_x, SO_x, and CO_x emissions. In FY 2000, the Hydrogen program will conduct R&D to install and operate two development units to demonstrate several processes for the production of hydrogen. In addition, the program will continue R&D and demonstration of proton exchange membrane (PEM) fuel cells including: installation and demonstration of a liquid fuel cell system for use in an arctic environment; installation and demonstration for a wind/reversible hydrogen generation and storage fuel cell system; demonstration of technologies for fueling of hydrogen vehicles; and three PEM fuel cell systems for distribution to remote power projects.

Hydropower — $7.0 million

This program supports the development of advanced turbine technology to allow the nation to maximize the use of its hydropower resources, while minimizing its adverse environmental impacts. Preliminary designs for advanced environmentally-friendly hydropower turbines have been completed by the DOE program in partnership with industry. In FY 2000, proof-

of-concept testing of an advanced turbine conceptual design will begin to verify predicted biological performance.

Electric Energy Systems and Storage — $41.0 million

This program funds three different activities related to electricity. **High Temperature Superconductivity** (HTS) receives the majority of funding and focuses on increasing electric utility system capacity as well as motor and generator efficiencies ($31.0 million). The **Energy Storage Systems** program ($6.0 million) continues R&D efforts to enhance performance and reliability and provide dependable energy storage technologies for the competitive marketplace. A new activity called the **Transmission Reliability** program ($4.0) will develop technologies and support policy making that will maintain and improve the reliability of the nation's electricity delivery system during the transition to competitive power markets.

In FY 2000, the HTS program will continue the Superconductivity Partnership Initiative with six, 50 percent cost shared projects to develop first-of-a kind designs for more efficient electrical transmission and distribution wires and cables. The Energy Storage Systems program will initiate one to two new Renewable Generation and Storage projects to produce improved integrated PV/storage hybrid systems; begin testing the Advanced Battery Energy System; and initiate development of a new energy storage system to improve transmission and distribution system stability. The Transmission Reliability program will focus on applying advanced computing, sensing, power electronics, communications, and control technologies to provide real time power system control for reliable and efficient operation of the nation's electric power system under both normal and emergency operating conditions.

Program Direction — $19.2 million

Funding supports 100 FTEs at both Headquarters and the field (Salary and Benefits - $11.7 million, Travel - $0.4 million, Support Services for all Solar and Renewable Energy programs - $5.1 and Other Related Expenses - $2.0 million). This funding includes a total of $2.6 million for staffing and operating the Golden Field Office.

Highlights of Program Changes ($ in millions)

Photovoltaic (PV) ***(FY 1999 $72.2; FY 2000 $93.3)*** **+$21.1**

- Fundamental Research will increase basic R&D on breakthrough, non-conventional PV technologies aimed at dramatic cost reductions, and begin new research on ultra high efficiency, high performance thin film devices and III-V based multifunction cells. *(FY 1999 $11.0; FY 2000 $20.3)* +$9.3
- PVMaT activities issue a new competitive solicitation to develop new materials and processes diagnostics necessary to scale up and manufacturing PV modules. *(FY 1999 $10.6; FY 2000 $16.0)* +$5.4
- PV:BONUS Project increase will be used for Phase III building integrated development contracts. *(FY 1999 $2.3; FY 2000 $5.0)* +$2.7
- The Partnerships for Technology Introduction effort will issue a new solicitation for projects emphasizing building integrated applications. *(FY 1999 $3.8; FY 2000 $6.0)* +$2.2

- The Million Solar Roofs Initiative increases to expand work on financing mechanisms, measurement and evaluation, technical standards and infrastructure such as net metering capability in support of State and Local Partnerships. *(FY 1999 $1.5; FY 2000 $3.0)* +$1.5

Concentrating Solar Power ***(FY 1999 $17.0; FY 2000 $18.9)*** **+$1.9**

- Distributed Power System Development increase reflects additional systems undergoing reliability and field testing as the Utility Scale Joint Venture Project (USJVP), Dish Engine Critical Components Initiative (DECC), and the Remote Power Systems projects move into their later phases *(FY 1999 $5.3; FY 2000 $6.7)* +$1.4
- Dispatchable Power System Development decrease reflects greatly reduced funding for the Solar Two Project, since testing will be complete; balanced against an increase in funding for the advanced trough component work in the USA Trough Initiative *(FY 1999 $5.9; FY 2000 $5.3)* -$0.6
- Advanced Component and System Research supports increased funding for reflective materials, concentrator structural design improvements, and advanced power conversion systems in order to meet long-term cost goals *(FY 1999 $5.0; FY 2000 $6.0)* +$1.0
- Strategic Alliances & Market Awareness includes additional analysis of domestic markets in order to take advantage of restructuring opportunities *(FY 1999 $0.7; FY 2000 $0.8)* +$0.1

Biomass/Biofuels ***(FY 1999 $73.2; FY 2000 $92.4)*** **+$19.2**

- Thermochemical Conversion (Biomass) activities increase to support expanded field verification and demonstration efforts. *(FY 1999 $1.6; FY 2000 $2.7)* +$1.1
- Systems Development (Biomass) increase to reflect the transition of several on-going projects from the design to the construction phase. *(FY 1999 $26.4; FY 2000 $32.2)* +$5.8
- Ethanol Production (Biofuels) will support shakedown and testing of an advanced pretreatment reactor to improve enzyme and fermentation operations. *(FY 1999 $35.9; FY 2000 $37.4)* +$1.5
- The Biodiesel program will conduct additional research to improve biodiesel technology and lower the costs of production. *(FY 1999 $0.7; FY 2000 $1.0)* +$0.3
- The Feedstock Production program will fund scale up research and mechanization research for the production of ethanol and co-products. *(FY 1999 $5.1; FY 2000 $8.6)* +$3.5
- The Regional Biomass Energy Program will use existing infrastructure to deploy biomass technologies through cost-shared grants and activities with state energy offices, federal, and regional organizations. *(FY 1999 $3.5; FY 2000 $4.5)* +$1.0
- Initiate the Integrated Bioenergy Technology Research and Technology Initiative in order to conduct analysis, laboratory research, and technology development for the production of co-products from diverse bioenergy feedstocks. *(FY 1999 $0.0; FY 2000 $6.0)* +$6.0

Wind ***(FY 1999 $34.8; FY 2000 $45.6)*** **+$10.8**

- In Applied Research, two to three innovative technology concepts will be developed through partnerships with competitively selected industry members under the Wind Partnerships for Advanced Component Technologies (WindPACT) program. *(FY 1999 $10.7; FY 2000 $13.5)* +$2.8
- In Turbine Research, Next Generation Turbine projects will enter the engineering and manufacturing development prototype fabrication phase. Several field verification projects using advanced technology wind turbines will be installed in new regions for wind power across the nation. *(FY 1999 $16.4; FY 2000 $21.2)* +$4.8
- In Cooperative Research and Testing, several hybrid systems field verifications projects will be competitively selected under the Hybrid Systems for Village Power project. A Wind Monitoring Network will be initiated to document performance of several new wind power plants in the United States. *(FY 1999 $7.7; FY 2000 $10.9)* +$3.2

Solar Program Support ***(FY 1999 $0.0; FY 2000 $10.0)*** **+$10.0**

- Electricity restructuring technical analysis and technical assistance. *(FY 1999 $0.0; FY 2000 $2.0)* +$2.0
- FY 2000 is the first year of the Competitive Solicitation program which is designed to combine the various activities previously conducted under two separate line items (the Renewable Indian Energy Resources and Buildings/Remote Power Programs) into a consolidated six-year open solicitation for renewable energy technologies to accelerate the development and use of the most promising technologies as determined by the marketplace. *(FY 1999 $0.0; FY 2000 $8.0)* +$8.0

Hydrogen Research and Development ***(FY 1999 $22.2; FY 2000 $28.0)*** **+$5.8**

- The Core R&D program will award multiple cooperative agreements in order to accelerate the production of hydrogen from renewable resources and develop and characterize new catalyzed metal hydrides and advanced carbon absorbents needed for hydrogen storage. These activities are aimed at achieving hydrogen production costs of $12.00 - $15.00 per million Btu for pressurized hydrogen form natural gas and biomass when the systems are produced in quantity.

Hydropower ***(FY 1999 $3.3; FY 2000 $7.0)*** **+$3.7**

- The requested increase provides primarily for the completion of biological experiments and the instrumentation necessary for the development of an advanced turbine as well as the initiation of engineering design of turbines with advanced dissolved oxygen features.

Nuclear Energy

Mission

The programs of the Office of Nuclear Energy, Science and Technology (NE) are vital elements of the Department's Energy Resources strategy aimed at promoting secure, competitive, and environmentally responsible technologies that serve the present and future needs of the United States.

Nuclear energy's continued role in electricity production provides for our economic and energy security, and is a critical element of our nation's global climate change responsibilities. Nuclear power plants currently produce about 20 percent of all U.S. utility-generated electricity without emitting carbon dioxide, a greenhouse gas, and sulfur and nitrogen oxide pollutants associated with the combustion of fossil fuels. The continued operation of existing U.S. nuclear power plants avoids emission of over 620 million metric tons of carbon dioxide annually. Thus, nuclear energy's continued role in electricity production is necessary so that our nation can meet its global climate change commitment.

Because of our nation's reliance on nuclear energy, the Department of Energy invests in services, products, and technologies vital to the future that are beyond the capability of private industry to fund alone. NE's important roles in Energy Resources include:

- Improving existing nuclear power plants and enhancing nuclear power as an energy option for the future.
- Developing Department of Energy mission critical technologies.
- Maintaining vital nuclear research facilities and supporting a strong educational infrastructure for nuclear technology.
- Reducing the life-cycle costs of environmental cleanup.

NE pursues its mission by managing national efforts to: address issues associated with the long-term operation of nuclear power plants; ensure continued U.S. leadership in nuclear technology; support nuclear education initiatives; build and deliver durable and reliable radioisotope power systems for space exploration and national security missions; develop, produce and distribute a reliable supply of radioisotopes for medicine and research; operate and maintain test and research reactors to meet isotope production and other Departmental goals; and manage uranium assets, and stewardship responsibilities associated with past uranium enrichment activities.

Program Overview

The Office of Nuclear Energy, Science & Technology (NE) maintains the federal government's expertise in nuclear technology. Through its unique research and development infrastructure, the Department strives to maintain nuclear energy as a reliable, economical, and environmentally-safe source of energy for the next century. The following programs support NE's four principal objectives.

Improving Existing Nuclear Power Plants and Enhancing Nuclear Power As An Energy Option for the Future

The safe, long-term operation of our nation's nuclear power plants is essential to meeting our international commitments to address global climate change and the domestic need for secure, diverse sources of energy to fuel our economy in the next century. Nuclear energy is an essential part of our nation's diverse energy resource portfolio, fueling our economy with a secure, domestic source of electricity.

The *Nuclear Energy Plant Optimization (NEPO) program*, part of the Climate Change Technology Initiative, is a new initiative proposed in FY 2000, to cooperate with industry to develop key technologies that can help assure the long-term viability of our nation's existing 104 nuclear power plants. This initiative is particularly important as utilities deal with uncertainties associated with electric industry restructuring. The U.S. is at a critical juncture with regard to the continued operation of its nuclear power plants. In the past three years, six reactors have closed. Licenses of U.S. nuclear power plants will begin to expire in large numbers in 2010, and licenses for thirteen more plants will expire in 2014 alone. Faced with regulatory and economic uncertainties, some utilities already have closed nuclear facilities well before their license expiration dates.

The goal of NEPO is to cooperate with industry to develop advanced technologies that can help ensure that these plants continue to safely generate reliable and affordable electricity up to and beyond their initial 40-year license periods. NEPO seeks to develop and apply new technologies to improve plant economics, reliability, availability, and resolve issues related to plant aging while maintaining a high level of safety. Overall, NEPO aims to help increase the average capacity factor of existing nuclear power plants from 71 percent in 1997 to 85 percent by 2010. The Department and the electric utility industry's Electric Power Research Institute have developed a Joint Strategic Research and Development Plan to prioritize and coordinate research and development needed over the next seven to ten years to sustain the operation of commercial nuclear power plants. The Department will continue to coordinate its program planning activities with the Nuclear Regulatory Commission to ensure that agency activities are not duplicated, but are complementary and performed in a cost-effective manner. The program will be guided by a chartered subcommittee of the Nuclear Energy Research Advisory Committee.

The *Nuclear Energy Research Initiative (NERI)* complements NEPO by addressing our nation's nuclear energy future. NERI, started in FY 1999, funds investigator-initiated research and development at universities, national laboratories, and industry to advance nuclear power technology, thus paving the way for expanded use of nuclear energy in the future and retaining U.S. leadership in nuclear technology. NERI research and development focuses on proliferation-resistant reactor and fuel technologies, high performance/efficiency reactor technology, advanced nuclear fuels, and new technologies for the minimization and management of nuclear waste. The program employs a two-stage independent peer review process to evaluate and select specific research proposals having the highest scientific and technical merit and relevancy to program objectives. The program is managed to promote collaboration among U.S. research institutions and information exchange with international organizations.

Developing Department Of Energy Mission Critical Technologies

The *Advanced Radioisotope Power Systems program* is our nation's only program for producing radioisotope power systems for deep space exploration and national security applications. The program supports the development, demonstration, testing, and delivery of power systems to the National Aeronautics and Space Administration (NASA) and other federal agencies. Previous NASA missions that have used radioisotope power systems include: the Apollo lunar scientific packages, Pioneer, Viking, Voyager, Galileo, Ulysses, Mars Pathfinder, and Cassini. None of these successful endeavors would have been possible without the Department's advanced power systems.

The *Isotope Program* exploits the Department's unique infrastructure that includes research reactors and particle accelerators to provide a reliable supply of stable and radioactive isotopes used in medicine, industry, and research. The program aims to supply these isotopes to meet customer specifications and achieve 95 percent on-time delivery. The program also supports development of new or improved isotope applications, products and services used in diagnosing illnesses, medical therapies such as cancer treatment, and other applications. The Department encourages private sector investment in new isotope production ventures and will sell or lease its facilities and inventories for commercial purposes. In FY 2000, the Department will inaugurate the Advanced Nuclear Medicine Initiative in order to advance technologies to apply the Department's isotope expertise to medical research, diagnosis, and treatment.

Maintaining Vital Nuclear Research Facilities and Supporting a Strong Educational Infrastructure for Nuclear Technology

NE's programs promote, support, and enhance the physical and human capital that comprises our nation's nuclear science and technology infrastructure.

Test reactors, laboratories, hot cells and support facilities have been built and operated at the Test Reactor Area (TRA) of the Idaho National Engineering and Environmental Laboratory since the early 1950s. Among these are the world's largest operating test reactor, the Advanced Test Reactor, and TRA Hot Cells. The *TRA Landlord program* ensures reliable support for TRA activities such as naval reactor fuel and core component testing, and production of radioisotopes for medicine and industry. The program funds operations, maintenance and upgrade activities for site common facilities and utilities. The program also ensures environmental compliance at the TRA, including identification of legacy waste and mitigation in accordance with State regulations and the Department's agreements with the State of Idaho.

The *Fast Flux Test Facility (FFTF)*, located at the Hanford Site in Washington, is a Government-owned, 400 megawatt, sodium-cooled reactor that operated from 1982 to 1992, providing a materials testing facility for nuclear fusion and fission programs. In April 1992, the FFTF was placed on hot-standby because the Department anticipated that it had enough research reactors in operation or planned to meet its needs. However, the Department later terminated one new reactor project and shutdown two existing research reactors. The FFTF reactor remains on standby.

In the Spring of 1999, the Department will decide whether to permanently deactivate the FFTF or conduct an Environmental Impact Statement before considering to restart it to support a range of national research reactor requirements. The FY 2000 request would fund minimum surveillance and maintenance of the FFTF to keep it in a safe and environmentally-compliant condition. Funding above the FY 2000 budget request would be required to restart or to immediately begin the permanent shutdown.

The *University Reactor Fuel Assistance and Support program* highlights the Department's commitment to maintain U.S. leadership in nuclear research and education. By supporting the operation and upgrade of university research reactors, providing fellowships and scholarships to outstanding students, and providing nuclear engineering research grants, the program helps maintain domestic capabilities to conduct research, address pressing environmental challenges. The program also helps to maintain the critical infrastructure necessary to attract,

educate and train the next generation of scientists and engineers with expertise in nuclear energy technologies.

Reducing the Life-Cycle Costs of Environmental Cleanup

The activities of the *Termination Costs program* are focused on Experimental Breeder Reactor-II (EBR-II) shutdown, conversion of sodium coolant and fuel treatment. The program also supports maintenance of Argonne National Laboratory-West infrastructure.

The electrometallurgical technology demonstration project at the Fuel Conditioning Facility to treat 125 EBR-II spent fuel and blanket assemblies will be completed in FY 1999. After completing the demonstration project, the Department will evaluate the suitability of the electrometallurgical technology for full-scale treatment of the remaining EBR-II spent fuel. The Department's decision to proceed with electrometallurgical processing will be based, in part, on the results from the National Research Council review requested by the Department, as well as the completion of an Environmental Impact Statement. No further treatment of assemblies beyond those in the demonstration project will occur until the suitability of electrometallurgical treatment of remaining EBR-II spent fuel is fully evaluated.

Uranium Programs support activities related to the Department's former uranium enrichment program that were not transferred to the United States Enrichment Corporation (USEC), and management of the Department's inventory of 700,000 metric tons of depleted uranium hexafloride stored in Ohio, Kentucky, and Tennessee. USEC, privatized in July 1998, now operates the Department's gaseous diffusion plants in Portsmouth, Ohio and Paducah, Kentucky through a lease arrangement. At the gaseous diffusion plants, Uranium Programs is responsible for the maintenance of the plants' facilities and grounds, the clean-up of PCB spills in leased areas, electricity supply, and payment of the post-retirement life and medical costs for retired contractor personnel.

Budget Overview

The FY 2000 budget request for NE programs is $269.3 million, which is $5.9 million higher than the FY 1999 funding level. The request proposes an increase in Nuclear Energy Research and Development of $13.6 million (18.4 percent) primarily to initiate the Nuclear Energy Plant Optimization program, expand the Nuclear Energy Research Initiative, and increase support for infrastructure at the Test Reactor Area. An increase for Uranium Programs reflects proposed new activities related to depleted uranium hexafloride conversion. Specifically, $5 million from the USEC Fund is requested for planning, research, and development activities related to depleted uranium hexafloride conversion.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Nuclear Energy					
Nuclear energy research and development					
Advanced radioisotope power system	36,800	37,000	37,000	——	——
Test reactor area landlord	7,307	6,766	9,000	2,234	33.0%
University reactor fuel assistance and support	7,000	11,000	11,345	345	3.1%
Nuclear energy plant optimization	——	——	5,000	5,000	——
Nuclear energy research initiative	——	19,000	25,000	6,000	31.6%
Total, Nuclear energy research and development	51,107	73,766	87,345	13,579	18.4%
Fast flux test facility	41,727	30,000[b]	30,000	——	——
Termination costs	87,669	85,000	65,000	-20,000	-23.5%
Uranium programs	27,077[a]	35,420	41,000	5,580	15.8%
Isotope support	18,944	21,500	21,000	-500	-2.3%
Program direction	24,393	21,242	24,960	3,718	17.5%
Subtotal, Nuclear Energy	250,917	266,928	269,305	2,377	0.9%
Use of prior year balances and other adjustments	-8,221	-3,546	——	3,546	100.0%
Total, Nuclear Energy	242,696	263,382	269,305	5,923	2.2%
Full time equivalent employment (FTEs)	*151*	*148*	*144*	-4	-2.7%

Notes:

[a] *Reflects transfer of $9.2 million to support the Fast Flux Test Facility, and $10.0 million to the Uranium Enrichment Decontamination and Decommissioning Fund.*

[b] *Excludes $9.2 million reprogrammed in FY 1998 to maintain the Fast Flux Test Facility in its current condition.*

The FY 2000 request also proposes a decrease in funding for the Termination Costs program as the Department evaluates its options for disposition of Experimental Breeder Reactor-II spent fuel during FY 2000.

FY 2000 Budget Request

The FY 2000 budget level of $269.3 million supports the following major program activities:

NUCLEAR ENERGY RESEARCH AND DEVELOPMENT -- $87.3 million

Advanced Radioisotope Power Systems -- $37.0 million

The FY 2000 request would continue support for the development of new advanced, highly-efficient radioisotope power systems that reduce the amount of plutonium-238 used and meet the more stringent performance requirements of future space missions. (Plutonium-238 is a non-weapons usable isotope of plutonium used to fuel radioisotope power systems.) The program would also continue developing new, non-mission-specific technologies that could be used in power supplies that cover a range of power levels required to support future space missions. These technologies include advanced conversion concepts, new materials, and new heat source technologies. In addition, the program would continue to maintain the infrastructure needed to produce durable power sources.

- In early FY 2000, an Environmental Impact Statement will be completed and a Record of Decision issued on whether to proceed to establish a domestic plutonium-238 production capability.
- By the end of FY 2000, operations to recover plutonium-238 scrap and waste for ongoing and future power systems would commence at Los Alamos National Laboratory.

Test Reactor Area (TRA) Landlord -- $9.0 million

The FY 2000 request would allow TRA Landlord activities to continue providing improvements in fire safety and upgrading of the site's utility systems at the Idaho National Engineering and Environmental Laboratory. Facility and utility upgrades remain a priority goal to prevent life threatening incidents related to aging systems. In FY 2000, the program would:

- Continue the final construction phases of the TRA Fire and Life Safety Upgrade construction project on schedule.
- Begin the construction phase of the TRA Electric Utility Upgrade construction project.

University Reactor Fuel Assistance and Support -- $11.3 million

The FY 2000 request would continue supporting the Nuclear Engineering Education Research program to stimulate innovative research at U.S. universities and provide for a modest increase in the reactor upgrade program to improve the operation and maintenance of U.S. university research reactors. NE plans to continue support for educational and research grants; supply fresh fuel to and transport spent fuel from university research reactors; fund reactor equipment upgrades; and continue the conversion of university reactor fuel cores from highly-enriched uranium to low-enriched uranium.

Nuclear Energy Plant Optimization (NEPO) -- $5.0 million

The FY 2000 request provides for a new NEPO activity to cooperate with industry (under the guidance of the Nuclear Energy Research Advisory Committee and in coordination with the Nuclear Regulatory Commission) to develop advanced technologies to enhance the long-term operability of U.S. nuclear power plants.

- In FY 2000, NEPO will accomplish two major tasks: laboratory benchmark of technology to reduce stress crack corrosion in nuclear plant components and demonstrate a prototypic method to non-destructively measure steam generator tube cracking.

Nuclear Energy Research Initiative (NERI) -- $25.0 million

The FY 2000 request would provide funding to continue multi-year activities initiated during FY 1999, and $6 million for new proposals. In FY 2000, NERI would identify one or more proliferation-resistant reactor concepts for low power and/or modular design applications. The program would continue to support research and development of plant technology that will address economic, proliferation, safety, and nuclear waste issues that could hinder the future expansion of nuclear power.

FAST FLUX TEST FACILITY (FFTF) -- $30.0 million

In the Spring of 1999, the Department will decide whether to permanently deactivate the FFTF or whether to conduct an Environmental Impact Statement in consideration for restarting it to support a range of national research reactor requirements. The FY 2000 request would fund minimum surveillance of the FFTF to keep it in a safe and environmentally-compliant condition. Funding above the FY 2000 budget request would be required to restart or to immediately begin the permanent shutdown.

TERMINATION COSTS -- $65.0 million

The activities of the Termination Costs program are focused on Experimental Breeder Reactor-II (EBR-II) shut down and deactivation of EBR-II facilities. The FY 2000 request would:

- Provide funding to maintain the Argonne National Laboratory-West site safety, security and safeguards infrastructure.
- Provide limited funding for the application of electrometallurgical technology since full-scale treatment of spent fuel will not commence immediately after completion of the demonstration in FY 1999. In FY 2000, using results from the demonstration project, the Department would develop the technical basis to support a DOE decision on future application of the electrometallurgical treatment technology in the disposition of remaining EBR-II spent fuel and certain other spent fuels in the Department's inventory. Furthermore, to support a decision in FY 2000 on the use of electrometallurgical technology, the Department will complete an Environmental Impact Statement by the end of FY 1999.
- Continue support for EBR-II shutdown by completing the draining and processing of sodium coolant from the reactor and shutdown of the Sodium Processing Facility in FY 2000.
- Initiate repackaging and removal of spent nuclear fuel that remains from an earlier fuel burn up development program now stored by a commercial entity.

URANIUM PROGRAMS -- $41.0 million

Under Uranium Programs, the Department is responsible for ensuring about 46,400 cylinders of depleted uranium hexafloride are maintained in an environmentally responsible manner by conducting annual cylinder inspections and implementing options to repair cylinders exhibiting accelerated corrosion. The Department is in the process of receiving about 11,200 cylinders from the United States Enrichment Corporation (USEC) pursuant to two 1998 agreements. The funding for maintenance of these cylinders has been provided to the Department by the USEC.

The Department will issue a Record of Decision by early FY 1999 on the long-term management strategy for its depleted uranium hexafloride based on a comprehensive programmatic Environmental Impact Statement. In accordance with P.L. 105-204, a plan and proposed legislation for the disposition of depleted uranium hexafloride inventory will be submitted with the President's new legislative budget proposals. The budget requests $5 million from the USEC Fund for planning, research, and development activities related to the conversion of depleted uranium hexafloride.

At the gaseous diffusion plants in Portsmouth, Ohio and Paducah, Kentucky, and Oak Ridge, Tennessee, the Department will maintain the plants' facilities and grounds, clean-up PCB spills in leased areas, supply electricity, and pay the post-retirement life and medical costs of retired contractor personnel. The Department remains responsible for safety documentation and assists the Nuclear Regulatory Commission in preparing reports to Congress.

ISOTOPE SUPPORT -- $21.0 million

The FY 2000 request proposes $2.5 million for a new Advanced Nuclear Medicine Initiative to sponsor nuclear medical science using a peer review selection process, initiate a focused program for using alpha particle-emitting isotopes to fight malignant diseases, and establish scholarships and fellowships for nuclear medicine specialists. The program would also continue production and distribution of isotopes necessary for medical, industrial, and research purposes. The FY 2000 request includes $8.0 million to complete construction funding for a new $14.0 million isotope target irradiation facility at the Los Alamos Neutron Science Center. The irradiation station will be 60 percent complete in FY 2000 and go on-line in FY 2001.

Modification of facilities at Los Alamos and Sandia National Laboratories for molybdenum-99 production will be completed in FY 1999, and no funds are requested for the activity in FY 2000. At this point, production of molybdenum-99 can be mobilized on an emergency basis if foreign supply is significantly disrupted, and facilities will be ready for private sector investment to take the project to routine commercial production. This year, the Department plans to pursue privatization of the production facilities for this vital medical isotope.

PROGRAM DIRECTION -- $25.0 million

The FY 2000 request would support salaries, benefits, travel and services for 144 Headquarters and Field full time equivalent personnel providing technical direction to Nuclear Energy Research and Development, the Uranium Program, and the Isotope Production and Distribution program. The program also supports the activities of the Nuclear Energy Research Advisory Committee.

Highlights of Program Changes ($ in millions)

Advanced Radioisotope Power Systems **+$0.0**

Reduced capital equipment expenditures in Radioisotope Power Systems (-$1.6). Increases in Plutonium-238 Acquisition and Processing to support an affirmative Record of Decision for domestic production of plutonium-238 (+$1.6). *(FY 1999 $37.0; FY 2000 $37.0)*

University Reactor Fuel Assistance and Support **+$0.3**

Increases support for supplying reactor fuel, reactor upgrades, and a new initiative in nuclear engineering education recruitment (+$0.7). Decreases support in matching grants, fellowships, scholarships, and reactor sharing (-$0.4). Nuclear Engineering Education Research program supported at FY 1999 level. *(FY 1999 $11.0; FY 2000 $11.3)*

Test Reactor Area Landlord **+$2.2**

Increases for mandatory legacy waste cleanup activities for environmental compliance (+$1.9); Electrical Utility Upgrade construction project (+$1.0); and construction operating support and other support (+$0.2). Decrease for Fire and Life Safety construction project (-$0.9). *(FY 1999 $6.8; FY 2000 $9.0)*

Nuclear Energy Plant Optimization (NEPO) **+$5.0**

NEPO is proposed as a new program to cooperate with industry to conduct scientific and engineering research to support the long-term operation of existing nuclear power plants. *(FY 1999 $0; FY 2000 $5.0)*

Nuclear Energy Research Initiative (NERI) **+$6.0**

Increase to fund new research proposals to be solicited and selected in FY 2000. *(FY 1999 $19.0; FY 2000 $25.0)*

Fast Flux Test Facility (FFTF) **+$0.0***

Provides for minimum safe condition for the FFTF. In the Spring of 1999, the Department will decide whether to permanently deactivate the facility or initiate an Environmental Impact Statement to consider restarting it. * Excludes $9.2 million in prior year balances reprogrammed in FY 1998. *(FY 1999 $30.0*; FY 2000 $30.0)*

Termination Costs **-$20.0**

Increase of technology activities for development and testing of process equipment on full-scale EBR-II spent fuel treatment (+$10.0). Decreases for infrastructure support (-$1.0); and for limiting support for the application of electrometallurgical technology since full-scale processing of spent EBR-II fuel will not commence immediately after completion of the demonstration (-$29.0). *(FY 1999 $85.0; FY 2000 $65.0)*

Uranium Programs **+$5.6**

Increases for PCB disposal and corrective maintenance at gaseous diffusion plants (+$2.6); depleted uranium hexafloride cylinders and maintenance (+$0.8); depleted uranium hexafloride conversion (+$7.6); and pre-existing liabilities (+$2.4) funded a total of $0.2 million higher than FY 1999 due to FY 1999 financing with prior year balances. Decrease for reduced costs related to the removal of highly-enriched uranium from Portsmouth, Ohio (-$7.8). *(FY 1999 $35.4; FY 2000 $41.0)*

Isotope Support **-$0.5**

Increase to provide additional funds to complete the target irradiation station at Los Alamos National Laboratory (+$2.0); support operation and maintenance of irradiation and hot cell facilities (+$3.7); and initiate the Advanced Nuclear Medicine Initiative (+$2.5). Decrease for molybdenum-99 initiative completed in FY 1999 (-$8.7). *(FY 1999 $21.5; FY 2000 $21.0)*

Program Direction **+$3.7**

Increase for salaries and benefits (+$1.6), and support services (+$2.2). Decrease for travel and other expenses (-$0.1). *(FY 1999 $21.2; FY 2000 $25.0)*

Environment, Safety and Health (Non-Defense)

Mission

The Office of Environment, Safety and Health (EH) is the Department of Energy's technical resource to assure the health and safety of its workers, the public and the environment near its facilities. This is accomplished by continuous improvement in environment, safety and health program and policy development; independent oversight of environment, safety, health, and safeguards and security programs; and sharing of technical resources, assistance, and information throughout the DOE complex.

Program Overview

The Environment, Safety and Health program is funded in three appropriations; (1) Energy Supply, (2) Other Defense Activities and (3) Defense Environmental Restoration and Waste Management. The non-defense EH program, funded in the Energy Supply appropriation, consists of Technical Assistance, the National Environmental Policy Act (NEPA) program, Management and Administration, and a Program Direction decision unit. The defense EH program funded within the Other Defense Activities appropriation includes independent oversight, nuclear safety enforcement, health studies, the Radiation Effects Research Foundation (RERF), and a Program Direction decision unit. The Defense Environmental Restoration and Waste Management appropriation supports an additional increment for domestic health studies at sites where the Department's Environmental Management program conducts cleanup activities.

The Energy Supply programs of EH are discussed in this section and are in three business functions: Technical Assistance, National Environmental Policy Act, and Management and Administration, as well as a portion of the total Program Direction request.

The Technical Assistance program is designed to assist DOE Field Operations solve complex environment, safety and health problems and operations issues. The program includes a range of corporate-based functions which address emerging environment, safety and health vulnerabilities, significant nuclear and industrial hazards, and improved methods for managing or implementing safety programs. Technical Assistance is comprised of several subprograms including: Line Management Support, which focuses on improving safety, environmental protection, and health programs, and includes those efforts to ensure the safe operation of the Department's nuclear facilities and hazardous activities; Environment, Safety and Health Guidance, which supports the development of interpretation and guidance documents related to environmental legislation; and Interagency Representation, which entails monitoring emerging environment, safety and health regulations affecting Departmental operations.

The National Environmental Policy Act program provides the expertise needed to assure that the Department complies with the National Environmental Policy Act and related environmental review requirements. The National Environmental Policy Act program also works to streamline the environmental review process to reduce cost and increase efficiency.

The Management and Administration program includes those business functions necessary to manage and direct the Office of Environment, Safety and Health. The major subprograms within Management and Administration include: Management Planning, which provides environment, safety and health management tools that enhance the environment, safety and health performance of DOE line organizations; Information Management, which maximizes the sharing and efficient use of environment, safety and health data throughout the Department of Energy complex; and Technical Training and

Professional Development, which assures that EH staff are properly trained to perform their duties in accordance with departmental policy and standards.

The Program Direction account includes salaries, benefits, and travel for a portion of the Office of Environment, Safety and Health's federal staff, as well as funding for the Office of Environment, Safety and Health's share of the Working Capital Fund. This fund provides for the costs for services such as office space, telephone service, and supplies.

Budget Overview

The FY 2000 Request for Non-Defense Environment, Safety and Health programs is $50.8 million, which is $3.3 million or approximately 7 percent greater than the FY 1999 comparable amount. Total funding for EH is $162.8 million; non-defense, $50.8 million; and defense, $112.0 million.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Environment, Safety & Health					
Office of environment, safety and Health (non-defense)	41,718	32,000	31,752	-248	-0.8%
Program direction	23,550	18,398	18,998	600	3.3%
Subtotal, Environment, Safety & Health	65,268	50,398	50,750	352	0.7%
Use of prior year balances	-1,897	-2,970	——	2,970	100.0%
Total, Environment, Safety & Health	63,371	47,428	50,750	3,322	7.0%
Full time equivalent employment (FTEs)	*175*	*129*	*124*	*-5*	*-3.9%*

FY 2000 Budget Request

The Environment, Safety and Health *Technical Assistance program* is requesting $16.4 million in FY 2000, which is equivalent to the FY 1999 level. The program will continue efforts to minimize threats to the health and safety of the workforce spanning the design, construction, operation, and decontamination and decommissioning of nuclear weapons production and research related facilities. In addition, the program will provide: direct assistance to field safety and health programs through the development of tools and processes designed to improve safety, health and the environment; interpretations and guidance related to numerous environmental regulations; and coordination of emerging environment, safety and health requirements that impact all Departmental activities.

The *National Environmental Policy Act* program is requesting $2.5 million, which is level with FY 1999. The FY 2000 request continues to foster sound departmental planning and decision-making and increased public trust by supporting the effective implementation of the NEPA process.

The *Management and Administration* program is requesting $12.8 million in FY 2000, a $0.2 million decrease or 2 percent below the FY 1999 comparable amount. The FY 2000 request supports all management and direction necessary to execute the Environment, Safety and Health mission throughout the Department of Energy complex, including budgeting, financial control, procurement, information management, and training.

The FY 2000 request provides $19.0 million for *Program Direction*, which is $0.6 million or 3 percent more than the FY 1999 comparable amount. This increase is due to general pay increases, promotions and within-grade increases. This FY 2000 Request provides for salaries, benefits and travel for a total of 124 full time equivalents (FTEs), a decrease of 5 FTEs from the comparable FY 1999 staffing level. The FY 2000 request also includes $5.6 million for the Working Capital Fund, equivalent to the comparable amount provided in FY 1999.

Highlights of Program Changes ($ in millions)

Management and Administration *(FY 1999 $13.0; FY 2000 $12.8)* **-$0.2**

The decrease in Management and Administration reflects a reduction in Technical Training and Professional Development activities due to the initial downsizing of the fellowships and grants program.

Program Direction *(FY 1999 $18.4; FY 2000 $19.0)* **+$0.6**

Salaries and benefits increase (+$1.6) as a result of the pay raise adjustment, offset by a reduction (-$1.0) in travel requirements for staff.

Use of Prior Year Balances *(FY 1999 -$2.7; FY 2000 $0.0)* **+$2.7**

Increase reflects that FY 1999 activities are supported by the use of prior year balances, whereas the FY 2000 activities will not be.

Technical Information Management

Mission

The Technical Information Management Program collects, manages, and disseminates scientific and technical information resulting from Department of Energy research and development and environmental programs. The program also provides worldwide energy scientific and technical information to DOE, U.S. industry, academia, and the public.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Technical Information Management					
Program support	1,600	1,600	1,600	——	0.0%
Program direction	7,500	7,000	7,500	500	7.1%
Subtotal, Technical Information Management	9,100	8,600	9,100	500	5.8%
Construction	1,000	——	——	——	——
Subtotal, Technical Information Management	10,100	8,600	9,100	500	5.8%
Use of prior year balances	-68	-191	——	191	100.0%
Total, Technical Information Management	10,032	8,409	9,100	691	8.2%
Full time equivalent employment (FTEs)	*102*	*98*	*97*	*-1*	*-1.0%*

Funding for the program will be increased $0.7 million above the FY 1999 level to $9.1 million. The program will continue its re-engineering to provide for electronic exchange of science and technology information resulting from the Department of Energy's research and development programs. Laboratory R&D results are recorded in either report literature or journals. Report literature will be electronically collected and disseminated via the "Information Bridge." For journal literature, the program will create bibliographic abstracts that can be located, searched and retrieved electronically. Program support will fund an addition of 15,000 to 20,000 new reports to the Information Bridge, provide electronic access to scientific journals, and establish a searchable information collection. Program direction will fund the 97 FTEs associated with the TIM program.

Field Operations

Mission

The Field Operations account provides support for the Multi-Purpose Operations Offices in: Chicago, Idaho, Oak Ridge, and Oakland. These Operations Offices provide centralized managerial, administrative, and technical support to the programmatic activities at their respective sites and nineteen laboratories and facilities nationwide.

FY 2000 Budget Request

Funding provides for salaries and benefits, travel, support services and other related expenses for these four Operations Offices. This funding is decreasing by $2.1 million from the FY 1999 appropriated level. This decrease is due to elimination of the modernization effort including certain computer hardware upgrades and equipment replacements at the Operations Offices in FY 2000 ($4.5 million). This decrease is offset by increases in cost of living adjustments ($0.7 million), support service increase ($0.6 million) due to fixed inflationary rate changes within existing contracts, and increases in other related expenses ($1.1 million) due to rent adjustments at Oakland Operations Office and adjustments for utilities and telecommunications services at the remaining Operations Offices.

Oak Ridge Landlord

Mission

The Oak Ridge Landlord account provides for infrastructure requirements and general operating costs for activities outside the fences of the Oak Ridge National Laboratory, the Y-12 Plant, and the East Tennessee Technology Park.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Oak Ridge Landlord					
Oak Ridge Landlord	11,000	11,000	11,812	812	7.4%
Use of prior year balances	-1,500	-594	——	594	100%
Total, Oak Ridge Landlord	9,500	10,406	11,812	1,406	13.5%

FY 2000 Budget Request

Funding for the program will be increased above the FY 1999 level to $11.8 million. Additional funding will provide adequate physical security, repair the Bethel Valley Road and upgrade computer systems. The increase is partially offset by the transfer of the Water Plant to the City of Oak Ridge and savings in the cost of federal building infrastructure maintenance.

Science

Mission

The mission of the Office of Science (SC) involves basic research in energy related areas. This research provides the science that drives technological development within the Department, and explores the health and environmental consequences of energy production, development, and use. Fusion Energy Sciences provides a science base for fusion as a potential energy source of the future. High Energy and Nuclear Physics conduct fundamental research in energy, matter, and the basic forces of nature. Research in these missions is conducted by both DOE national laboratories and university researchers, and the mission includes operation, maintenance, and construction of new scientific facilities.

Program Overview

All major Office of Science research programs are funded in the Science Appropriation. The Technical Information Management program, which collects and disseminates science and technology information resulting from the multi-billion dollar Department of Energy's R&D program, is funded in the Energy Supply Appropriation. The basic research and technology programs of the Department are working together to improve their efforts on important energy problems.

Office of Science research is generally of a long-term, fundamental nature. The research includes: basic research in the natural sciences and engineering leading to new and improved energy technologies and to understanding and mitigating the environmental impact of energy technologies; a science base for identifying, understanding, and anticipating the long-term health and environmental consequences of energy production, development, and use; and advanced computing research including operation of super computers, networks, and related facilities for analysis, modeling, simulation, and prediction of complex phenomena related to Department of Energy missions. There are also several associated activities which support laboratory infrastructure management, evaluation of Department of Energy research programs and projects, and partnerships with the private sector leading to innovative applications relevant to the nation's energy sector. In addition, the Office of Science designs, builds, and operates world-class, state-of-the-art scientific facilities available for use by merit-reviewed researchers from Department of Energy national laboratories, universities, and the private sector.

The *High Energy and Nuclear Physics* programs provide insight into the nature of energy and matter, the basic forces which govern all processes in nature, and the structure and interactions of atomic nuclei. The programs support large, world class scientific facilities for physics research. Research is performed primarily at Department of Energy national laboratories using large particle accelerators and detectors. The research is conducted by more than 3,000 researchers and more than 1,000 graduate students from more than 100 universities and the national laboratories. The Department of Energy funds approximately 90 percent of all federal research in High Energy and Nuclear Physics.

The goal of *High Energy Physics* is to provide new insights into the nature of energy and matter and to better understand the natural world. The research program is dependent upon

DOE's state-of-the-art particle accelerators, fixed target and colliding beam facilities, and particle detectors. The major facilities are the Alternating Gradient Synchrotron (AGS) at Brookhaven National Laboratory, the Tevatron at Fermilab (with both fixed and colliding beam facilities), and the Stanford Linear Accelerator Center (SLAC). In December 1997 the Department of Energy and the National Science Foundation signed an agreement with CERN concerning U.S. contributions to the Large Hadron Collider (LHC) accelerator and detectors. The U.S. will be responsible for designing and fabricating particular subsystems of the accelerator and two detectors. The program also supports the technology base required to develop the advanced concepts and technologies for new High Energy Physics facilities.

The *Nuclear Physics* program conducts research activities to understand the structure of atomic nuclei and the fundamental forces required to hold nuclei together. The experimental research program supports particle accelerators and several other research facilities located at national laboratories and universities. A Nuclear Theory program complements experimental activities. The program supports the operation and maintenance of facilities and the construction of new facilities. Construction of the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory, a colliding beam accelerator which will study nuclear matter as it undergoes a phase transition to a plasma of gluons and quarks, will be completed in FY 1999, and begins its first full year of operations and research in FY 2000.

Biological and Environmental Research (BER) has two foci: environment and health research. Environmental activities focus on the consequences of energy production and use, risk assessment, transport of pollutants, environmental restoration and bioremediation technologies. It also includes a substantial climate change research program. The Department continues its commitment to important scientific inquiry into the basic understanding of global climate and the carbon cycle. There is continued emphasis on carbon management science that underpins the exploration of related innovative energy futures. The Climate Change Technology Initiative (CCTI) sequences the genomes of hydrogen and methane producing microbes or microbes that could be used to sequester carbon dioxide, and studies the processes of natural carbon sequestration in both terrestrial and ocean systems in order to ultimately enhance these processes (see funding table below). The new Scientific Simulation Initiative, described more fully below, also includes global change research applications. BER supports operation of the William R. Wiley Environmental Molecular Sciences Laboratory. Health related programs include understanding and mitigating the potential health effects of energy development and waste cleanup; cellular, molecular, and structural biology for understanding energy related health effects and for biotechnology research; the Human Genome Program; and diagnostic and therapeutic medical applications of nuclear and other related technologies.

The *Basic Energy Sciences (BES)* program supports high quality research to provide a basis for new and improved energy technologies, provides world class scientific facilities, and designs and builds advanced facilities for future research needs. Large national laboratory scientific facilities, staffed by laboratory, university, and industry researchers, are used to conduct investigations in materials and chemical sciences, engineering and geosciences, and energy biosciences as well as in many other disciplines. The Climate Change Technology Initiative (CCTI) provides the knowledge base for the development of advanced technologies to reduce CO_2 emissions (see funding table below). The Scientific Simulation Initiative described below, includes an application on combustion processes and devices. Capital equipment and construction supports research activities at the user facilities. The program

funds the operation and maintenance of these state-of-the-art scientific user facilities. Facilities include research reactors, accelerators, x-ray and ultraviolet light sources, a laser facility for combustion research, and other specialized facilities. Construction activity for the Spallation Neutron Source (SNS) continues; it will be a world-class state-of-the-art facility for neutron scattering and related research.

Climate Change Technology Initiative
(Dollars in Millions)

	FY 1999	FY 2000
Basic Energy Sciences	$ 8.0	$ 20.0
Biological and Environmental Research	5.5	13.0
	13.5	33.0
SBIR/STTR Adjustment	- 0.3	- 0.8
Net CCTI	$13.2	$ 32.2

Fusion Energy Sciences supports several fusion reactor facilities, and both laboratory and university based experimental and theoretical research teams. The program has been restructured to concentrate on the scientific principles involved in fusion rather than on fusion technologies. The goal of the program is to "Acquire the knowledge base for an economically and environmentally attractive fusion energy source." The program also fosters the advancement of plasma science which has applications in other fields of science and near-term industrial uses.

The *Computational and Technology Research (CTR)* program supports research in Mathematical, Information, and Computational Sciences, which studies advanced computing applications and techniques and provides high performance computer access to Department of Energy researchers including the Next Generation Internet initiative and the DOE 2000 initiative. The Scientific Simulation Initiative, described below, will support research on teraflop computing and networking facilities, advanced computer science, and competitively selected basic scientific applications. In addition, the CTR program also funds Laboratory Technology Research, which supports technology research collaborations and other partnerships.

The Office of Science also advances the *Multiprogram Energy Laboratories-Facilities Support* program, which provides funding for the general purpose infrastructure of the five Office of Science multiprogram laboratories; the *Energy Research Analyses* program which evaluates Department of Energy research projects; and *Science Program Direction* which funds Office of Science staff.

Scientific Simulation Initiative

The new Scientific Simulation Initiative (SSI) represents a joint DOE/NSF investment in advanced computing resources for use in complex scientific research. The SSI builds on the capabilities of DOE's Accelerated Strategic Computing Initiative (ASCI) which is currently developing 100 teraflop computers for use in 2004 in a science based stockpile stewardship program. (One teraflop equals one trillion operations per second; current desktop computers operate at 100,000 operations per second and existing supercomputers operate at 0.5 trillion operations per second.) The includes research and development of a new generation of simulation and modeling tools benefiting from lessons learned from ASCI. It will revolutionize DOE's ability to solve science problems of extraordinary complexity. The SSI

is of relevance to the Department's programs through application of the emerging power of exceptional computational capabilities.

SSI is part of the President's Information Technology initiative, and emphasizes scientific computing. The initiative builds on existing coordinated efforts with other agencies such as the U.S. Global Change Research Program and the National Science and Technology Council Committee on High Performance Computing and Communications. SSI is funded in four programs in the Office of Science as shown in the following table:

Initiative for Scientific Simulation
(Dollars in Millions)

	FY 2000
Computational and Technology Research	$52.0
Biological and Environmental Research	10.0
Basic Energy Sciences	7.0
Science Program Direction	1.0
	70.0
SBIR/STTR Adjustment	- 1.5
Net SSI	$68.5

Traditional scientific research consisted of theory and experimentation, but the emergence of computers added the new dimension of simulation and modeling. The SSI will focus funding on advances in computer science and enabling technologies to meet the challenges of designing software for current and future teraflop computers and for developing more sophisticated models for increasingly complex applications. The Computational and Technology Research (CTR) program will support SSI teraflop computer science and enabling technologies as well as providing computer and networking facilities. DOE will establish an open solicitation process that seeks the widest participation in establishing its terascale computing infrastructure, including competition among national laboratories, universities, and industry, based on their qualifications. The sites for the major teraflop computers will be selected through peer-reviewed competition. CTR will also initiate a selection process for two basic scientific applications of terascale technology from within the Office of Science's research portfolio.

The SSI also funds two scientific applications in other Office of Science programs. The first, in the Biological and Environmental Research program, will focus on significant progress to understand, model, and predict the effects on the earth's global environment of atmospheric greenhouse gas emissions, with an emphasis on carbon dioxide. It will develop fully coupled global systems models with higher spatial resolution to simulate climate over periods of tens to hundreds of years. The second application, in Basic Energy Sciences, is to understand, model, and predict the behavior and properties of combustion processes and devices. It seeks to develop combustion modeling tools for accelerated design of combustion devices meeting national goals for emission reduction and energy conservation.

Budget Overview

The FY 2000 request for the Office of Science is $2,844.5 million. Of this amount, $2,835.4 million is in the Science appropriation, and $9.1 million for the Technical Information Management program is in the Energy Supply appropriation.

The High Energy Physics budget provides $70.0 million for U.S. participation in the **Large Hadron Collider**. DOE will design and fabricate particular subsystems of the accelerator and two large detectors. The total DOE contribution will be $450 million, with much of this going to U.S. laboratories, universities and industry. High Energy Physics will focus on the utilization of new facilities at Fermilab and SLAC, and will increase funding for university researchers; the AGS will be transferred to Nuclear Physics at the end of FY 1999. In Nuclear Physics, FY 2000 will be the first full year of operations for the **Relativistic Heavy Ion Collider (RHIC);** the **Thomas Jefferson National Accelerator Facility** will operate at near FY 1999 levels, and **Bates** at MIT will terminate operations after FY 1999.

The budget also maintains full operation of user facilities, supports environmental and life science programs, including the **U.S. Global Change Research Program (USGCRP)** and **Human Genome** program, provides increased funding for the **Climate Change Technology Initiative,** continues construction of the **Spallation Neutron Source**, and continues funding for the President's **Next Generation Internet** initiative**.** In FY 2000, a new **Initiative for Scientific Simulation** is launched at a level of $70.0 million. In Fusion Energy Sciences, the **National Spherical Torus Experiment (NSTX)** will begin its first full year of operation, and decontamination and decommissioning of the **Tokamak Fusion Test Reactor (TFTR)** begins.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Science					
High energy physics	665,931	691,616	697,090	5,474	0.8%
Nuclear physics	317,397	338,465	342,940	4,475	1.3%
Biological and environmental research	395,676	436,688	411,170	-25,518	-5.8%
Basic energy sciences	651,816	799,524	888,084	88,560	11.1%
Computational and technology research	146,779	157,471	198,875	41,404	26.3%
Energy research analyses	1,434	1,000	1,000	——	——
Multiprogram energy labs - facility support	21,247	21,260	21,260	——	——
Fusion energy sciences	217,290	222,636	222,614	-22	0.0%
Science program direction	44,500	49,800	52,360	2,560	5.1%
Small business innovation research (SBIR)	71,798	——	——	——	——
Subtotal, Science	2,533,868	2,718,460	2,835,393	116,933	4.3%
Use of prior year balances & other adjustments	-50,295	-20,600	——	20,600	100.0%
Total, Science	2,483,573	2,697,860	2,835,393	137,533	5.1%
Full time equivalent employment (FTEs)	*306*	*318*	*325*	7	*2.2%*

FY 2000 Budget Request

High Energy Physics - $697.1 million

The FY 2000 budget request for High Energy Physics (HEP) is $697.1 million, an increase of $5.5 million over FY 1999. The U.S. finalized negotiations for involvement of DOE and NSF

in the CERN **Large Hadron Collider (LHC)** project in December 1997. Funding for the LHC increases from $65.0 million in FY 1999 to $70.0 million in FY 2000, with the majority of the increase for detector fabrication.

The FY 2000 HEP budget is largely driven by new facilities coming on line. At Fermilab, funding increases *(FY 1999 $283.3 ; FY 2000 $291.8)* primarily to support the initial operation of the recently completed **Fermi Main Injector** (29 weeks) with the upgraded CDF and D-Zero detectors. Fermilab's budget includes funding to keep the **Neutrinos at the Main Injector (NuMI)** construction project *(FY 1999 $14.3; FY 2000 $22.0)*, and the **Wilson Hall Safety Improvements** project *(FY 1999 $6.7; FY 2000 $4.7)* on schedule. Funding increases at the Stanford Linear Accelerator Center (SLAC) *(FY 1999 $145.0 ; FY 2000 $150.2)* primarily for the first year operation of the **B-Factory** with its **BaBar** detector (39 weeks); SLAC research on the next generation accelerator concepts is reduced by $5.0 million. The SLAC budget includes initial construction of the **SLAC Research Office Building** in FY 2000 *(TEC $7.2 ; FY 2000 $2.0)*. At Brookhaven National Laboratory funding for HEP decreases *(FY 1999 $53.4; FY 2000 $32.8)* as the **Alternating Gradient Synchrotron (AGS)** is transferred to the Nuclear Physics program for use as the injector to the Relativistic Heavy Ion Collider (RHIC); the AGS operates for 8 weeks in FY 2000 vs. 14 weeks in FY 1999, with primary operation of the accelerator funded by Nuclear Physics. Funding for research by universities and other laboratories also increases *(FY 1999 $101.3; FY 2000 $113.2)*, including a 3.5 percent over inflation increase to university based research in response to a recent advisory committee recommendation. The budget also includes $2.9 million for new science education activities directed at providing opportunities for pre-college teachers, and for visits by Faculty/Student Science Teams to DOE laboratories.

Nuclear Physics - $342.9 million

The FY 2000 request for Nuclear Physics is $342.9 million, an increase of $4.5 million over FY 1999. The **Thomas Jefferson National Accelerator Facility (TJNAF)** will continue operation at 4,500 hours, and deliver continuous beam (at differing energies and currents) to all three experimental halls *(FY 1999 $70.3; FY 2000 $73.7)*. In accordance with guidance from the Nuclear Sciences Advisory Committee, **Bates** at MIT *(FY 1999 $15.4 ; FY 2000 $4.0*) will cease operations at the end of FY 1999; the FY 2000 funds will be used for decontamination and decommissioning and support of some scientists; fabrication of the Bates BLAST detector is discontinued. **Relativistic Heavy Ion Collider (RHIC**) construction will be completed on schedule in FY 1999 *(FY 1999 $16.6 ; FY 2000 $0)*, and it is scheduled for 33 weeks of operation in FY 2000 *(FY 1999 $92.7; FY 2000 $118.5)*; operation of the AGS is funded by Nuclear Physics in FY 2000. The **Radioactive Ion Beam** facility at Oak Ridge continues operation at a level of 2,400 hours ($14.7 million). Nuclear Theory continues at $15.8 million. The budget also includes $1.0 million for new science education activities including funding for visits by Faculty/Student Science Teams to DOE laboratories.

Biological and Environmental Research - $411.2 million

The FY 2000 budget request for Biological and Environmental Research (BER) is $411.2 million, a net decrease of $25.5 million from FY 1999. The funding reduction is largely attributed to completion of several congressionally directed projects in FY 1999; excluding these one-time funding requirements, the budget grows slightly. The FY 2000 request includes $13.0 million ($5.5 million in FY 1999) for the **Climate Change Technology**

Initiative which will sequence microbes for methane/hydrogen production or for carbon sequestration, and develop a better understanding of natural carbon sequestration processes in terrestrial and ocean systems. The budget includes a new request of $10.0 million for the **Scientific Simulation Initiative**; the funding will be used to support USGCRP research by developing advanced fully coupled global system models of much higher spatial resolution than currently available and that simulate climate over periods of tens to hundreds of years. Life Sciences subprogram *(FY 1999 $176.3; FY 2000 $163.7)* funding decreases due to completion of several research activities and a congressionally directed project; funding for the **Human Genome** program *(FY 1999 $88.8; FY 2000 $90.3)* reflects a new and accelerated DOE/NIH 5-year plan calling for determining a draft sequence of all 3 billion bases by 2001, and the complete finished sequence of the human genome by 2003. The low dose exposure program *(FY 1999 $8.0 ; FY 2000 $10.0)* will explore the effects of low dose radiation and chemical exposure on humans to determine safe exposure levels for environmental remediation workers.

The Environmental Processes subprogram *(FY 1999 $116.9; FY 2000 $133.8)* funds the Department's **U.S. Global Change Research Program (USGCRP)** activities; and includes operation of three Atmospheric Radiation Measurement (ARM) sites, 25 AmeriFlux sites (providing measurements on carbon exchange between the atmosphere and terrestrial biosphere), and development of next generation coupled atmospheric-ocean models with a grid size of 200 KM. Environmental Remediation subprogram activities *(FY 1999 $67.3; FY 2000 $65.8)* include continuation of the **Natural and Accelerated Bioremediation Research (NABIR)** program ($19.1 million) and operation of the **Environmental Molecular Sciences Laboratory (EMSL)** for about 600 users ($29.4 million). In Medical Applications, **Boron Neutron Capture Therapy (BNCT)** Phase I trials will be completed for 100 patients at 3 sites ($10.9 million), and research on radiopharmeceuticals ($24.7 million) and new medical imaging concepts ($5.2 million) will continue. The BER budget includes $1.9 million for new science education activities including support for teachers working with teams of scientists and science educators to understand the nature of DOE's scientific research.

Basic Energy Sciences - $888.1 million

The FY 2000 budget request for Basic Energy Sciences (BES) is $888.1 million, a net increase of $88.6 million over FY 1999. Most of this increase is attributable to the **Spallation Neutron Source (SNS)** which increases from $130.0 million in FY 1999 to $214.0 million in FY 2000. Funding for the **Climate Change Technology Initiative (CCTI)**, which is spread among all subprograms, is $20.0 million ($8.0 million in FY 1999). A new request of $7.0 million for the **Scientific Simulation Initiative** will be used to develop, through simulation and modeling, a detailed understanding of combustion processes to accelerate the development, characterization, and validation of design tools for advanced combustion devices. The budget request includes $1.9 million for new science education activities which will support college faculty and students participating in research at DOE laboratories. Most other program activities are conducted at or below the FY 1999 level.

Materials Research continues funding for the **Los Alamos Neutron Scattering Center (LANSCE)** instrumentation upgrade *(TEC $20.5; FY 1999 $4.5 ; FY 2000 $6.0)*. The **Experimental Program to Stimulate Competitive Research (EPSCoR)** is continued at a level of $6.8 million. FY 2000 includes $22.6 million to maintain and provide safety improvements for the **High Flux Beam Reactor (HFBR)** which remains in a standby mode

awaiting a final decision concerning restart. Chemical Research funds most activities at near the FY 1999 level, the exceptions being increased funding for CCTI and SSI. Funding within Chemical Sciences for facilities operations increases from $68.9 million in FY 1999 to $71.4 million in FY 2000 to proceed with the beryllium reflector replacement and use of three new experimental stations at the **High Flux Isotope Reactor (HFIR)**. Research in Engineering and Geosciences will be de-emphasized, and Energy Biosciences research will increase slightly from the FY 1999 level because of increased funding for CCTI. Successful completion of the **Combustion Research Facility Phase II** in FY 1999 (FY 1999 $4.0 million) partially offsets the construction ramp up for SNS.

Fusion Energy Sciences - $222.6 million

The FY 2000 budget for Fusion Energy Sciences is $222.6 million, the same as in FY 1999. Funding for the **Doublet III-D (DIII-D)** at General Atomics continues operation of the facility for 14 weeks, with a focus on auxiliary heating systems and power exhaust systems *(FY 1999 $51.1 ; FY 2000 $52.4)*. The **Alcator C-Mod** at MIT increases from 12 weeks of operation in FY 1999 to 18 weeks in FY 2000 *(FY 1999 $17.5; FY 2000 $17.9)*. The **National Spherical Torus Experiment (NSTX)** *(FY 1999 $26.6 million; FY 2000 $26.3 million)* fabrication is completed and it will have its first full year of operations in FY 2000 (14 weeks). Research on novel magnetic confinement configurations is increased *(FY 1999 $19.0; FY 2000 $23.7)*. A three-year, $48 million, decontamination and decommissioning of the **Tokamak Fusion Test Reactor (TFTR)** will begin in FY 2000 ($+10.0 million). Theory and General Plasma Science efforts will be funded near the FY 1999 level, and Inertial Fusion Energy is also funded at near the FY 1999 level *(FY 1999 $9.8; FY 2000 $10.1)*. In addition to reduced funding for ITER, the Enabling R&D subprogram has reduced funding for engineering research *(FY 1999 $43.1; FY 2000 $27.8)*.

Computational and Technology Research - $198.9 million

The FY 2000 budget request for Computational and Technology Research is $198.9 million, an increase of $41.4 million from FY 1999. The Mathematical, Information and Computational Sciences (MICS) subprogram *(FY 1999 $138.8; FY 2000 $184.6)* includes funding for the President's **Next Generation Internet** initiative *(FY 1999 $14.6; FY 2000 $14.6)* which will: 1) promote experimentation with the next generation of networking technologies; 2) develop a next generation network testbed to connect universities and federal research institutions at rates that demonstrate new networking technologies and support future research; and 3) demonstrate new applications that meet important national goals and missions. The program supports the joint Office of Science/Defense Programs' **DOE 2000 Initiative** *(FY 1999 $11.0; FY 2000 $11.0)* which is developing advanced computational tools and the "virtual laboratory." The request also includes $52.0 million for the **Scientific Simulation Initiative** to develop needed software systems and deploy them into the DOE computing infrastructure, to initiate competition for terascale computing and networking facilities and associated supporting hardware, and to initiate selection of new scientific projects for teraflop application. MICS also provides supercomputer access and advanced communications support to DOE researchers through the **National Energy Research Scientific Supercomputing Center (NERSC)** *(FY 1999 $26.5; FY 2000 $27.5)* and the **Energy Sciences Network (ESnet)** *(FY 1999 $14.8; FY 2000 $14.8)*. Support for Scientific Applications Pilot Projects and Advanced Computing Research Centers is reduced by $9.1

million. The budget also requests $1.9 million for new science education activities to support college faculty and student research participation at DOE laboratories.

The Laboratory Technology Research subprogram *(FY 1999 $16.1; FY 2000 $14.3)* supports the transfer of high-risk, long-term basic research to applied energy efficiency and utilization technologies. Within the Office of Science, this program takes the lead for leveraging science and technology to advance understanding and to promote U.S. economic competitiveness through cost-shared partnerships with the private sector. Funding for technology partnerships increases by $1.2 million; funding for a congressionally directed project was completed in FY 1999 ($-3.0). The Advanced Energy Projects subprogram *(FY 1999-$2.5; FY 2000-$0)* is not funded in FY 2000 as a result of changes in Computational and Technology Research program priorities.

Energy Research Analyses - $1.0 million

Funding for this program is continued at the FY 1999 level of $1.0 million. The program will evaluate the quality and relevance of DOE research projects by independent peer reviews, and will identify additional technical needs. It also supports evaluation of critical DOE planning and policy issues by outside experts such as the National Academy of Sciences.

Multiprogram Energy Laboratories-Facilities Support - $21.3 million

The FY 2000 request is maintained at $21.3 million, the FY 1999 level. This program supports the general purpose infrastructure of the Office of Science's five multiprogram national laboratories through line-item construction funding. In FY 2000, the program will fund construction for General Purpose Facility projects (one new and the continuation of three on-going subprojects, and the continued funding for one line-item project scheduled for completion in 2001), and ES&H projects (one new and two on-going subprojects). The program also continues Payments in Lieu of Taxes for Brookhaven National Laboratory and Argonne National Laboratory-East.

Program Direction - $52.4 million

The FY 2000 request for Science Program Direction is $52.4 million, an increase of $2.6 million over FY 1999. This program funds personnel who staff the Biological and Environmental Research, Basic Energy Sciences, Computational and Technology Research, Fusion Energy Science, and High Energy and Nuclear Physics programs, support services, and other related expenses. Staffing in FY 2000 is projected at 325 full time equivalents (FTEs), an increase of 7 FTEs from FY 1999. Science Education activities are continued at $4.5 million.

Highlights of Program Changes ($ in millions)

High Energy Physics *(FY 1999 $691.6; FY 2000 $697.1)* **+$5.5**

- Increase funding for university researchers in response to the recent HEPAP Subpanel recommendation. +$6.5
- Fermilab: Operation of the new **Fermi Main Injector** and the CDF and D-Zero detectors ($+5.6); FY 2000 is final year of capital funding for CDF and D-Zero upgrades ($-12.6); increased capital funding for the **MINOS** detector ($+3.9). -$3.1
- SLAC: Operation of new **B-Factory** with **BaBar** detector ($+5.3), decreased funding for next generation accelerator concepts R&D ($-5.0). +$0.3

- BNL: Although the AGS will be operated by the Nuclear Physics program in FY 2000, it will operate for 8 weeks for High Energy Physics. -$20.6
- Funding for the **Large Hadron Collider** increases by $5.0 million to a total of $70.0 million in FY 2000; the majority of the increase is for detector development. +$5.0
- Construction: Continue the **Neutrinos at the Main Injector** project *(FY 1999 $14.3; FY 2000 $22.0)*, the **Wilson Hall Safety Improvements** project *(FY 1999 $6.7; FY 2000 $4.7)*; initiate the **SLAC Research Office Building** project ($+2.0). +$7.7
- Increased funding for capital equipment. +$4.1
- Support new science education activities. +$2.9

Nuclear Physics *(FY 1999 $338.4; FY 2000 $342.9)* **+$4.5**

- Construction of the **Relativistic Heavy Ion Collider** is completed in FY 1999. -$16.6
- Nuclear Physics assumes responsibility for the AGS in the fourth quarter of FY 1999; **RHIC** begins its first full year of operation in FY 2000 with anticipated operating time of thirty-three weeks. +$25.8
- **Bates** terminates operations in FY 2000 and enters a D&D phase. -$11.4
- Funding for operation and research at the **Thomas Jefferson National Accelerator Facility** increases. +$3.1
- Support new science education activities. +$1.0

Biological & Environmental Research *(FY 1999 $436.7; FY 2000 $411.2)* **-$25.5**

- Funding for several congressionally directed projects is completed. -$42.7
- Increase funding for the **low dose effects program** *(FY 1999 $8.0, FY 2000 $10.0)*. +$2.0
- Complete biological research activities. -$8.0
- Funding for the **Human Genome** program increases *(FY 1999 $88.8, FY 2000 $90.3)* to meet national program goals. +$1.5
- Increase funding for the **Climate Change Technology Initiative** *(FY 1999 $5.5; FY 2000 $13.0)*. +$7.5
- Initiate funding for the **Scientific Simulation Initiative** supporting USGCRP research. +$10.0
- Increased funding for radiopharmeceutical research. +$4.5
- Support new science education activities. +$1.9

Basic Energy Sciences *(FY 1999 $799.5; FY 2000 $888.1)* **+$88.6**

- In FY 1999 provide final year of construction funding for the **Combustion Research Facility-II** *(FY 1999 $4.0; FY 2000 $0)*. -$4.0

- Continue into the second year of **Spallation Neutron Source** construction *(FY 1999 $101.4; FY 2000 $196.1)*, project R&D declines as scheduled *(FY 1999 $28.6; FY 2000 $17.9)*. *(FY 1999 $130.0; FY 2000 $214.0)*. +$84.0
- Funding for the **Climate Change Technology Initiative** continues at an increased level *(FY 1999 $8.0; FY 2000 $20.0)*. +$12.0
- Initiate funding for the **Scientific Simulation Initiative** in combustion. +$7.0
- Reduction in Engineering and Geosciences research program. -$10.4
- Reduce funding in Materials Science research ($-1.7), Chemical Sciences research (-2.5), and Biosciences research ($-1.1) -$5.3
- Support new science education activities. +$1.9
- Decreased funding for capital equipment. -$2.3
- Funding for the **HFIR** increases *(FY 1999 $29.7, FY 2000 $34.6)* to reflect increased operations, replacement of the beryllium reflector, and facility upgrades. +$4.9

Computational & Technology Research *(FY 1999 $157.5; FY 2000 $198.9)* **+$41.4**

- Initiate funding for the **Scientific Simulation Initiative**. +$52.0
- Reduce funding for Scientific Applications Pilot Projects and Advanced Computing Research Facilities**.** -$9.0
- Support new science education activities. +$1.9
- Increase technology partnerships ($+1.2), complete one congressionally mandated project ($-3.0). -$1.8
- Terminate the Advanced Energy Projects program. -$2.5

Fusion Energy Science *(FY 1999 $222.6; FY 2000 $222.6)* **+$0**

- Fabrication of the **National Spherical Torus Experiment (NSTX)** is completed; it begins its first full year of research and operations; installation of the neutral beam heating system is completed in FY 2000. *(FY 1999 $26.6; FY 2000 $26.3)*. -$0.3
- A three-year, $48 million decontamination and decommissioning begins for the TFTR. +$10.0
- Research on novel magnetic confinement configurations increases. +$4.7
- The U.S. effort toward the **International Thermonuclear Experimental Reactor** will be closed out in early FY 1999 ($-12.2), other enabling R&D activities are reduced ($-3.1) -$15.3

Program Direction *(FY 1999 $49.8; FY 2000 $52.4)* **+$2.6**

- Funds cost-of-living, locality pay and other annual increases for all Office of Science staff; provides additional FTEs (two for Spallation Neutron Source and five for the Scientific Simulation Initiative). +$2.6

Departmental Administration

Mission

The offices funded under the Departmental Administration appropriation account provide headquarters with guidance and support benefitting all operating elements of the Department in areas such as human resources, administration, accounting, budgeting, legal services, information management systems, life cycle asset management, workforce diversity, policy, congressional liaison, and public affairs. Their mission is to provide internal and external customers with timely, quality service which facilitates the achievement of DOE's goals.

Program Overview

Organizations supported in this appropriation include the Office of the Secretary; Management and Administration; Chief Financial Officer; Field Management; Congressional and Intergovernmental Affairs; Public Affairs; General Counsel; Policy; Economic Impact and Diversity; Board of Contract Appeals; and Contract Reform. In addition, the account budgets for Cost of Work for Others, which provides for the cost of products and services provided by DOE's laboratories and other contractors to non-departmental users. Finally, this account also receives offsetting revenues/receipts for the goods and services associated with the Cost of Work for Others program as well as miscellaneous revenues from a variety of other sources.

Budget Overview

The Department is continuing to provide funding for upgrades and improvements to our outdated information technology infrastructure that complements the **Corporate Management Information** initiative which began in FY 1998. In FY 2000, funds for this initiative will permit the Department to continue to make physical improvements in telecommunications (both telephone and Local Area Network) infrastructure; provide for expanded connectivity/interoperability throughout the DOE complex; fully implement the Strategic Information Management program; and implement information architecture standards. These improvements are critical and will help create the necessary platform to permit the Department to take full and immediate advantage of the new corporate systems coming on-line and other technology improvements resulting from the Corporate Management Information Program. Specifically, the $13.0 million in FY 2000 will fully implement planned enhancements of personnel management and state-of-the-art management information systems to reliably and effectively capture and integrate information and financial data and then quickly make it usable to executives, managers, and staff on a real-time basis.

Departmental Administration
(dollars in millions)

	FY 1999 Appropriation	FY 2000 Request	Difference
Office of the Secretary	5.0	4.9	-0.1
Personnel Compensation & Benefits	105.9	112.1	+6.2
Other Expenses	79.5	74.7	-4.8
Program Support	12.5	18.6	+6.1
Contract Reform	3.2	3.2	+0.0
Total, Administrative Operations	206.1	213.5	+7.4
Cost of Work for Others	44.3	34.0	-10.3
Total gross appropriation	250.4	247.5	-2.9
Revenues	-136.5	-116.9	+19.6

In addition, for FY 2000 the Department is proposing to increase funding for the **Corporate Management Information Program** by $5.0 million to begin testing and pilot implementation of accounting system requirements associated with the development of the **Business Management Information System-financial Management** (BMIS). The Department will maximize its investment by streamlining information and financial systems by cooperatively developing an automated, technology-based system to benefit the entire Department and meet critical financial management goals put forward in GPRA.

In support of the Department's overall mission, the Departmental Administration account provides funding for eleven, Department-wide management organizations. The primary functions of these organizations encompass such diverse activities as policy and planning, finance and personnel, legal and procurement, life cycle asset management, information management systems, data processing, congressional and public liaison, civil rights, training, privatization issues, and management of Working Capital Fund activities. The total on-board head count projected for FY 2000 is 1,297 and reflects a 33 percent decrease from the original FY 1995 baseline of 1,920, including the Office of the Secretary. Additionally, Departmental Administration provides for programmatic activities such as energy and environmental policy studies, minority education, business/community support and assistance, and Department-wide technical training development.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999
Departmental Administration				
Administrative operations				
Office of the Secretary	4,123	5,000	4,940	-60
Management and administration	104,657	115,450	114,723	-727
Chief financial officer	21,662	23,120	23,792	+672
Field management	7,954	7,500	8,080	+580
Board of contract appeals	703	715	838	+123
Congressional and intergovernmental affairs	4,337	4,900	4,910	+10
Public affairs	3,413	3,500	3,963	+463
General counsel	19,656	19,892	21,434	+1,542
Policy	17,800	16,350	20,862	+4,512
Economic impact and diversity	6,003	6,400	6,746	+346
Contract Reform		3,200	3,200	+0
Total, Administrative operations	190,308	206,027	213,488	+7,461
Cost of work for others	37,470	44,312	34,027	-10,285
Subtotal, Departmental Administration (gross)	227,778	250,339	247,515	-2,824
Use of prior year balances & other adjustments	-3,623	-2,237	-7,138	
Total, Departmental administration (gross)	224,155	248,102	240,377	
Miscellaneous revenues				
Revenues associated with cost of work	-33,279	-46,614	-35,587	+11,027
Other revenues	-57,596	-89,916	-81,300	+8,616
Total, Miscellaneous revenues	-90,875	-136,530	-116,887	+19,643
Full time equivalent employment (FTEs)	*1,254*	*1,299*	*1,297*	

FY 2000 Budget Request

The FY 2000 request provides $112.1 million for related salary and benefit expenses for 1,257 full-time equivalent employees, excluding the Office of the Secretary. The request also includes travel funding of $3.5 million. Funding for contractual services and program support are $71.2 million and $18.6 million, respectively. Examples of significant program support activities are: efforts to advance U.S. policies to facilitate U.S. private sector investment; analyze and assess emerging environmental issues; support for the Department's corporate information management system; and for minority education/business community support and assistance; and DOE technical training development. Finally, the request also includes $4.9 million for the Office of the Secretary to support 40 full-time equivalent employees.

Working Capital Fund

Working Capital Fund
FY 1999 and FY 2000 Activities

	FY 1999	FY 2000
Building Rent & Operations	55,335	56,072
Telephone Services	6,608	6,608
Postage	1,881	1,983
Printing and Graphics	3,478	3,478
Supplies	2,777	2,777
Copiers	2,423	2,423
Contract Closeouts	621	621
Desktop	1,329	1,329
Payroll and Personnel	2,054	2,208
Networking	3,059	3,059
Corporate Executive Information System	94	94
Electronic Services	903	903
Total	80,562	81,555

The Working Capital Fund finances business-type activities throughout DOE to: ensure that program mission budgets include a fair allocation of the costs of common administrative services; improve the efficiency of administrative services by providing managers with the opportunity and responsibility to make choices on the amount, priority, and where possible, the sources of administrative services used by their programs; and expand the flexibility of the Department's budget structure to permit service providers to respond to customer needs. The Working Capital Fund Board composed of eleven members and chaired by the Director of Management Fund Administration has adopted specific pricing policies for the various business lines. For example, in FY 1998, contract audit services were removed from the fund while payroll processing was added. There were no changes in FY 1999. The FY 2000 budget has added two additional business lines: Corporate Executive Information System and Electronic Services.

Cost of Work for Others

The budget request of $34.0 million provides for the cost of products and services provided by the field offices and National laboratories for non-DOE users. Work results from revenue programs related to DOE's mission or its reimbursable work for state and local entities which are precluded by law from making advance payments. Costs are offset with revenues received from the sale of products or services. Examples of proposed FY 2000 revenue generating products or services are timber sales, utility sales, seismic monitoring, and research and development activities conducted for state and local governments. The request also includes $11.5 million to cover costs associated with the acceptance, storage, and management of foreign reactor spent fuel, which is offset by revenues on a dollar for dollar basis.

Revenues

Revenue estimates of $35.6 million are associated with the Cost of Work for Others program and support the products and services described above. Miscellaneous revenues of $81.3 million are derived from the sale of by-products that have no costs associated with the Departmental Administration appropriation, but which offset the appropriation. Examples are: lease of Oak Ridge Operations facilities (Gaseous Diffusion Plant) by the U.S. Enrichment Corporation, handling and basin storage of spent fuel cores from Navy ships,

residual material (uranium) in the spent fuel cores, and added factor and depreciation from the DOE Reimbursable Work for Others program.

Highlights of Program Changes (dollars in millions)

Office of Secretary *(FY 1999 $5.0; FY 2000 $4.9)* **-$0.1**

The change in this budget is comprised of two components. One is an increase associated with the full effect of the FY 1999 pay raise and the partial effect of the FY 2000 pay raise and general pay increases for promotions, within grade increases, and performance awards (+$0.2). The second is a transfer of the security related costs from the Office of the Secretary to the Office of Nonproliferation and National Security (-$0.3).

General Management *(FY 1999 $105.9; FY 2000 $112.1)* **+$6.2**

The increase is due to the effect of the FY 1999 pay raise and the partial effect of the FY 2000 pay raise plus promotions and other miscellaneous adjustments (+$4.7); and increases associated with hiring 7 additional FTEs for the Office of Policy (+$1.1) and 2 additional Deputy General Counsels and critical hires to address skill mix issues in the Office of the General Counsel (+$0.4).

Other Expenses *(FY 1999 $79.5; FY 2000 $74.7)* **-$4.8**

Decrease due to the elimination of efforts associated with an appropriated $10.0 million under Public Law 105-277 for Y-2K activities in FY 1999 (-$10.0). This decrease is offset by increases in the Office of Management and Administration due to improving the Department's infrastructure to accommodate new and upgraded management systems (+$1.0), increasing interagency agreements, and computer software and hardware upgrades and replacements (+$1.5). Other increases are due to additional travel requirements associated with expanding international travel to support Secretarial initiatives, conferences supporting the National Energy Policy Plan, and ongoing Climate Change Workshops (+$0.5) and administrative support/Working Capital Fund needs for seven additional FTEs (+$1.4) within the Office of Policy and International Affairs. Within the Office of General Counsel, the increase reflects the need for computer/LAN support (+$0.2), and the need for new budget authority to cover patent costs which were previously funded by uncosted balances with the Department of Commerce (+$0.3). In addition, an increase in the Office of Field Management will enhance project management implementation (+$0.1) and the increase in the Office of Public Affairs is associated with the DOE Homepage (+$0.1).

Program Support *(FY 1999 $12.5; FY 2000 $18.6)* **+$6.1**

Increase is primarily due to contractual requirements for the on-going development of the Corporate Business Management Information System-Financial Management (+$5.0). In addition, there is an increase in program support for additional domestic and international policy and environmental studies (+$1.1).

Cost of Work *(FY 1999 $44.3; FY 2000 $34.0)* **-$10.3**

Decrease due primarily to a transfer of biological research at the Drosophilia Center for the National Institutes of Health to Reimbursable Work (-$7.3) and a projected fewer number of shipments of Foreign Reactor Spent Fuel to the Savannah River and Idaho sites (-$4.1). These two major decreases are offset by small increases, including the initiation of a new project with the Alabama Emergency Management Agency at Argonne National Laboratory (+$1.1).

Revenues ***(FY 1999 -$136.5; FY 2000 -$116.9)*** **+$19.6**

Decrease in revenues associated with a decline in work for the Cost of Work For Others Program is primarily the result of: a decrease due to the transfer of research work at the Drosphilia Center for the National Institutes of Health to the Reimbursable Work Program (+$7.4); and a decrease due to a fewer number of Foreign Research Reactor Spent Fuel Shipments to Savannah River and Idaho (+$4.1); offset by a net of (-$0.5) comprised of other small increases and decreases.

Decrease in Miscellaneous Revenues is due primarily to a decline in costs associated with changes incurred at Idaho for handling and basin storage of spent fuel cores for the Department of the Navy (+$3.0); and a significant decline in estimates for added factor and depreciation charges collected from other federal agencies and from other non-federal entities (+$12.9); offset by an increase at Pittsburgh for reimbursement by the Navy for nuclear burn up material (-$7.3).

Office of the Inspector General

Mission

Major statutory responsibilities of the office of Inspector General (OIG) as stated in section 4 of the Inspector General Act of 1978, as amended, 5 U.S.C. App.3, are to detect and prevent fraud, abuse, and violations of law and to promote economy, efficiency, and effectiveness in the operations of the Department of Energy.

Program Overview

The OIG promotes economy and efficiency in DOE programs through audits, inspections, investigations, and other reviews. Major areas of audit concentration include the Department's national laboratory system (which accounts for about $6 billion in annual obligations), environmental remediation activities ($6 billion), and defense programs. Further, the OIG has been successful in pursuing both criminal and administrative allegations of activities associated with DOE programs. The OIG's actions in identifying attainable economies and efficiencies in Departmental operations have recently provided a positive monetary impact of approximately $4.4 million per audit FTE per year.

Budget Overview

The FY 2000 budget request for the Office of the Inspector General focuses resources on implementing the requirements of the Chief Financial Officers (CFO) Act of 1990 and the Government Management Reform Act (GMRA) of 1994. Implementation of the CFO Act requires the submission of financial statements to the Director of the Office of Management and Budget for each Departmental revolving fund and trust fund, as well as activities which perform substantial commercial functions. The GMRA expanded the provisions of the CFO Act by requiring the OIG to audit financial statements covering all accounts and associated activities of the Department and submit them to the Office of Management and Budget annually. Additional programmatic requirements which have been imposed on the OIG include appropriations report language creating the Department's Working Capital Fund, which requires an annual OIG audit of the Fund; OMB Circular 131 requiring the OIG to audit the Department's value engineering program; and Executive Order 12863, the "President's Foreign Advisory Board," which requires at least quarterly and "as necessary and appropriate" reporting to the Oversight Board; and the Community Whistleblower Protection Act of 1998, which requires the OIG to review complaints filed by community complainants and to communicate with Congress, the Secretary, and the complainants regarding such concerns.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Office Of Inspector General					
Office of inspector general	27,500	29,000	30,000	1,000	3.4%
Full time equivalent employment (FTEs)	*245*	*266*	*257*	*-9*	*-3.4%*

FY 2000 Budget Request

The FY 2000 budget request for the OIG is $30.0 million for the salaries, benefits, travel, and support services associated with 257 FTEs.

Performance objectives for FY 2000 activities include the completion of financial statement audits and the rendering of an annual opinion on the Department's consolidated financial statements. The OIG will also strive to complete at least 60 percent of the audits planned for the year and replace those audits not started with more significant audits which identify time-sensitive issues needing review. Audit areas in FY 2000 will include the Department's efforts in contract administration, environmental programs, implementation of performance based contracting, realignment initiatives, workforce restructuring, economic development, and reviews of key programs identifying areas with weaknesses or problems where resources are at risk. Investigations will be focused on allegations of serious violations of federal law, with the goal of obtaining acceptance of 75 percent of the cases presented for prosecution.

In FY 2000, the OIG will strive to complete 90 percent of all audits within 12 months and reduce by 5 percent the time required to complete programmatic inspections, thereby allowing DOE managers to take corrective, cost saving, or recoupment action(s).

Highlights of Program Changes ($ in millions)

Office of the Inspector General *(FY 1999 $29.0; FY 2000 $30.0)* **+$1.0**

The FY 2000 increase of $1.0 million is needed to provide for the pay raise and step increases, and to develop and equip specialized work units to audit ADP systems and data and to investigate computer related crimes.

Weapons Activities

Mission

The mission of the Department's Weapons Activities, under the management of Defense Programs, is to maintain a safe, secure, and reliable nuclear weapons stockpile under a Comprehensive Test Ban Treaty, utilizing a science-based approach within a smaller, more efficient and modern weapons complex infrastructure. This approach relies on scientific understanding and expert judgement, rather than on underground nuclear testing and the development of new weapons, to predict, identify and correct problems affecting the safety and reliability of the stockpile. Enhanced experimental capabilities and new tools in computation, surveillance, and advanced manufacturing are necessary to certify weapon safety, performance, and reliability without underground nuclear testing. Weapons will be maintained, modified, or retired and dismantled as needed to meet military requirements, remediate potential safety and reliability issues, and to meet arms control objectives.

Program Overview

The Weapons Activities budget request is comprised of three decision units: Stockpile Stewardship, Stockpile Management, and Program Direction.

The **Stockpile Stewardship** decision unit funds activities to maintain confidence in stockpile safety and reliability without nuclear testing through a technically challenging science-based program utilizing upgraded or new experimental, computational and simulation capabilities. This program continues with major initiatives in high energy density research with lasers, radiography, and pulsed power; and accelerated research and development in advanced computations to acquire and use data to improve predictive capabilities, which will be the foundation of the science-based stewardship approach. The **Accelerated Strategic Computing Initiative (ASCI)**, a discrete element within the Stockpile Stewardship program, provides the leading-edge, high-end simulation capabilities, including experimentally validated computational and simulation models, needed to meet weapons assessment and certification requirements without nuclear testing. To accomplish this, ASCI integrates the resources of the national laboratories, computer manufacturers, and academia to push the development of hardware and advanced applications, and then introduces the new applications into the core programs.

Major new experimental facilities are also planned to expand and enhance the scientific and engineering base for stockpile stewardship, and to assure that Defense Programs can continue to attract and retain the high quality personnel needed to make the scientific and technical judgements related to the safety and reliability of the stockpile in the absence of nuclear testing. The **National Ignition Facility (NIF)**, scheduled to be completed in 2003, will provide a means to study primary boosting, assess secondary performance, and validate new physics models and codes while pursuing its goal to demonstrate thermonuclear ignition in the laboratory. The **Dual-Axis Radiographic Hydrodynamic Test Facility (DARHT)**, when completed in FY 2002, will provide an experimental capability to validate the implosion performance of nuclear weapon primaries.

The **Stockpile Management** decision unit provides funding to continue historical responsibilities to provide near term and long range support for the enduring stockpile, and for ensuring an adequate supply of tritium. Along with stockpile surveillance this includes normal maintenance, corrective maintenance and system refurbishment, as well as weapon dismantlement. The Stockpile Management decision unit funds initiatives in enhanced surveillance and advanced manufacturing, as well as the Stockpile Management Restructuring Initiative projects to downsize production capabilities needed for the future. The activities are supportive of the infrastructure requirements cited in the Nuclear Posture Review. The Department has pursued a dual-track approach for tritium production and a decision in 1998 to select a primary and backup production method. After a three year development effort and extensive review of the regulatory, cost, proliferation, environmental, technical, and national security issues associated with each option, on December 22, 1998, Secretary Richardson selected Commercial Light Water Reactors owned by the TVA for producing tritium in the future. Engineering, development and demonstration, and preliminary design of essential components of an Accelerator for Production of Tritium will be supported as a backup technology.

The **Program Direction** decision unit funds all federal personnel related costs; support and contractual services for federal employees; and other program support costs. The Secretary is currently reviewing federal staffing under the Workforce 21 initiative. To the extent additional staffing is approved, we will reprioritize other activities.

Budget Overview

The Defense Programs request for FY 2000 is $4,531.0 million. Overall, the Defense Programs request represents an increase of $131.0 million or 3 percent above the FY 1999 appropriation. The Stockpile Stewardship account increases approximately 8 percent to accommodate the growth in Core Stewardship activities as the program begins to integrate the achievements of the **Accelerated Strategic Computing Initiative (ASCI)** into the ongoing Core Stewardship program; the planned growth in ASCI; and increased funding for educational activities at LANL which have been transferred into this account.

The FY 2000 budget request also supports initiatives begun during the past five years that are maturing and contributing the new tools and technologies needed for science based stewardship under the provisions of a Comprehensive Test Ban Treaty (CTBT). We are meeting our commitments to provide new and enhanced experimental facilities, and have accomplished significant downsizing and reorganizing of the federal and contractor workforce to accomplish this mission in the future.

The FY 2000 request supports implementation of the third annual update of the Stockpile Stewardship Plan which will be submitted to Congress in the near future. Within the Stockpile Stewardship account, research and development efforts will continue on the near and long term requirements of the nuclear weapons stockpile. In particular, efforts will be placed on providing new methods for assessing, manufacturing, and certifying weapons' components and systems without the use of underground nuclear testing. The Stockpile Management account will continue ongoing activities required to manage the stockpile, and will support the Stockpile Plan and Limited Life Component Exchange (LLCE) schedules. Funding to implement the Secretary's December 22, 1998 tritium decision is also included.

Weapons Activities

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Weapons Activities					
Stockpile stewardship	1,869,213	2,125,882	2,286,200	160,318	7.5%
Stockpile management	2,031,487	2,071,512	1,998,300	-73,212	-3.5%
Program direction	248,600	249,600	246,500	-3,100	-1.2%
Subtotal, Weapons activities	4,149,300	4,446,994	4,531,000	84,006	1.9%
Use of prior year balances & other adjustments	-2,608	-46,994	——	46,994	100.0%
Total, Weapons Activities	4,146,692	4,400,000	4,531,000	131,000	3.0%
Full time equivalent employment (FTEs)	*1,837*	*1,876*	*1,799*	*-77*	*-4.1%*

FY 2000 Budget Request

Stockpile Stewardship

The Stockpile Stewardship decision unit requests $2,286.2 million in FY 2000, an increase of $160.3 million or 7.5 percent above the FY 1999 comparable appropriation. The request includes continued funding for the physical and intellectual infrastructure at the weapons laboratories and the Nevada Test Site, and provides the scientific and engineering tools needed to ensure the safety, reliability, and performance of the nuclear weapon stockpile without nuclear testing. The FY 2000 budget request also includes funding for Defense Programs to conduct two subcritical experiments at the Nevada Test Site to provide valuable scientific information about the behavior of nuclear materials, including plutonium, under extreme conditions. In addition, funding is continued for several initiatives undertaken to support the science-based Stockpile Stewardship program. The **Accelerated Strategic Computing Initiative (ASCI)/Stockpile Computing** will continue to accelerate the development of highly complex nuclear weapons simulation codes and work with industrial partners on advanced computer platforms, and computing environments and infrastructure ($542.5 million). In FY 2000, Defense Programs will demonstrate a computer code capable of performing a three-dimensional analysis of the dynamic behavior of a nuclear weapon primary, including a prediction of the total explosive yield, on an ASCI computer system.

Funding for the **National Ignition Facility (NIF)** will continue in accordance with the schedule in the Project Execution Plan consistent with an FY 2003 completion date (operation and maintenance $5.9 million; construction $248.1 million). The **Technology Partnerships** request ($22.2 million) will continue to focus resources on the highest priority partnerships supporting the national security mission including advanced manufacturing, as well as supporting the Amarillo Plutonium Research Center (APRC $5.0 million); Advanced Computational Technology Initiative (ACTI; up to $9.0 million). The request also includes $29.8 million for the **Education** program, which includes funding for the Los Alamos School District (up to $8.0 million), the Northern New Mexico Educational Foundation (a minimum of $6.0 million), the relocation of the National Atomic Museum ($5.5 million), and other educational activities at the laboratories ($10.3 million).

Stockpile Management

The Stockpile Management decision unit requests $1,998.3 million in FY 2000, a decrease of $73.2 million or 3.5 percent below the FY 1999 obligational level. The **Core Stockpile Management Program** ($1,522.0 million) will maintain, evaluate, modify, improve, and dismantle weapons in accordance with the nuclear weapons stockpile plan. In FY 2000, Defense Programs will adhere to schedules for the safe and secure dismantlement of about 375 nuclear warheads that have been removed from the U.S. nuclear weapons stockpile. The **Enhanced Surveillance** initiative will continue to develop tools, techniques, and models for measuring, qualifying, calculating, and predicting the effects of aging on weapons materials and components and understanding these effects as they impact weapons safety and reliability ($85.3 million). The **Advanced Manufacturing, Design and Production Technologies** program will focus on re-engineering and modernizing the weapons complex into a modern, agile, and fully integrated operation capable of responding to a wide range of production requirements ($85.0 million). The **Radiological/Nuclear Accident Response** program request is $77.6 million, including funds to support additional training for first responders to weapons of mass destruction incidents and additional start-up and equipment for rapid response. For FY 2000, the budget request includes $170 million (operation and maintenance $106.0 million; construction $64.0 million) for the **tritium program** and begins implementation of the Commercial Light Water Reactor (CLWR) track to provide a reliable source of tritium for the nuclear weapons stockpile. In FY 2000, the request for materials at current Defense Programs facilities is $28.4 million.

Program Direction

For the Program Direction decision unit, the budget requests $246.5 million in FY 2000, a decrease of $3.1 million or 1.2 percent below the FY 1999 comparable appropriation. Initiatives to re-engineer the federal workforce will continue.

Highlights of Program Changes ($ in millions)

Stockpile Stewardship *(FY 1999 $2,125.9; FY 2000 $2,286.2)* **+$160.3**

The budget request for the Stockpile Stewardship decision unit increases by $160.3 from FY 1999 to FY 2000. The changes in the Core Stockpile Stewardship, Inertial Confinement Fusion, and Technology Partnerships/Education programs are described below.

Core Stockpile Stewardship *(FY 1999 $1,560.4; FY 2000 $1,768.5)* **+$208.1**

- Conducts research and technology development activities at the weapons laboratories and the Nevada Test Site needed to assure our ability to certify confidence in the nuclear weapons stockpile under a Comprehensive Test Ban Treaty; emphasis is on integration of developments in **ASCI** into ongoing advanced physics and engineering research. *(FY 1999 $1,012.0; FY 2000 $1,153.9)* +$141.9

- **ASCI** will continue the development of simulation codes, computer platforms and computing environments needed to address the challenges of credibly simulating the performance, safety, and reliability of the enduring nuclear stockpile. FY 2000 will continue to accomplish the planned program goal to attain the 100 TeraOps level by 2004 as well as the intermediate milestones of 10 and 30 TeraOps planned for 2000 and 2002 respectively. The ASCI program serves as one of the cornerstones of the Stockpile Stewardship program in the absence of underground testing. *(FY 1999 $300.9; FY 2000 $341.0)* +$40.1

- Continues laboratory stockpile computing activities and begins to develop a local computational environment for weapons scientists to use high-end simulation

capabilities using data generated by the **ASCI** codes and computers to address time-sensitive stockpile issues. *(FY 1999 $182.8; FY 2000 $201.5)* +$18.7

- Infrastructure - Initiates a program to maintain lab and NTS infrastructure using a 5-10 year planning horizon, with a goal of about $100 million in annual investment. *(FY 1999 $64.7; FY 2000 $72.1)* +$7.4

Inertial Confinement Fusion (ICF) ***(FY 1999 $503.4; FY 2000 $465.7)*** **-$37.7**

- The operation and maintenance funds (Other Project Cost funding) associated with the National Ignition Facility **(NIF)** decrease in line with the project's outyear plan *(FY 1999 $6.8; FY 2000 $5.9)* and the O&M funds for the ICF base program remain flat. *(FY 1999 $212.4; FY 2000 $211.7)* -$1.6

- Construction funds associated with the **NIF** decrease in line with the project's outyear plan. *(FY 1999 $284.2; FY 2000 $248.1)* -$36.1

Technology Partnerships/Education ***(FY 1999 $62.1; FY 2000 $52.0)*** **-$10.1**

- Technology Partnerships decreases by 48.5 percent with many of the ongoing cooperative agreements to begin to closeout in FY 1999. The Amarillo Plutonium Research Center ($5.0) and Advanced Computational Technology Initiative (ACTI) will be funded up to $9.0 million to provide maximum benefit to the weapons program. *(FY 1999 $43.1; FY 2000 $22.2)* -$20.9

- Education increases are due to an increase in funding for the Northern New Mexico Education Enrichment Foundation *(FY 1999 $3.0; FY 2000 a minimum of $6.0)* and additional funding to move the National Atomic Museum within the city of Albuquerque ($5.5M). *(FY 1999 $19.0; FY 2000 $29.8)* +$10.8

Stockpile Management ***(FY 1999 $2,071.5; FY 2000 $1,998.3)*** **-$73.2**

The budget request for the Stockpile Management decision unit decreases by $73.2 million from FY 1999 to FY 2000. This is a result of changes throughout the Stockpile Management programs as described below.

- Prior year work to be conducted in FY 1999. *(FY 1999 $28.6; FY 2000 $0.0)* -$28.6

Core Stockpile Management ***(FY 1999 $1,610.8; FY 2000 $1,552.0)*** **-$58.8**

- Increase lab and flight tests for W76, W87, W88, and B-61 to meet requirements of the Nuclear Explosive Safety Study. *(FY 1999 $243.0; FY 2000 $271.0)* +$28.0

- Continue efforts to produce war reserve pits by FY 2001 by continuing to recapture technologies and by fabricating W88 pits. *(FY 1999 $104.0; FY 2000 $116.0)* +$12.0

- Dismantle about 375 weapons focusing on the W56, W79, and the B-53; the funding decrease is driven by workload efficiencies, fewer start-ups, and reduced costs associated with transportation and staging of warheads. *(FY 1999 $64.0; FY 2000 $41.0)* -$23.0

- Continue activities to maintain and support the nuclear weapons stockpile. *(FY 1999 $1,000.0; FY 2000 $995.0)* -$5.0

- Complete Enriched Uranium Operations restart activities and reduce infrastructure and maintenance funding reflecting completion of congressionally directed

infrastructure improvements at the plants in FY 1999. *(FY 1999 $199.8; FY 2000 $129.0)* -$70.8

Enhanced Surveillance *(FY 1999 $81.5; FY 2000 $85.3)* **+$3.8**

- Funds essential tasks in organics and dynamics, nonnuclear components, and plutonium experiments. Provides diagnostic tools for stockpile evaluation. Increase reflects transitioning of laboratory demonstrated tools into Plant operations and the acceleration of research vital to SLEP decision making.

Advanced Manufacturing, Design and Production Technologies *(FY 1999 $79.5; FY 2000 $85.0)* **+$5.5**

- Continued support of the Advanced Manufacturing, Design, and Production Technologies initiative. Increase supports development, installation, and evaluation of the Production Realization Environment tools and databases to ensure availability for the SLEP Program.

Radiological/Nuclear Accident Response *(FY 1999 $76.2; FY 2000 $77.6)* **+$1.4**

- Maintains readiness level for all assets.

Tritium Source *(FY 1999 $167.0; FY 2000 $170.0)* **+$3.0**

- Implements the December 22, 1998 decision to pursue the Commercial Light Water Reactor as the primary tritium supply technology and the Accelerator for Production of Tritium as backup.

Materials *(FY 1999 $27.9; FY 2000 $28.4)* **+$0.5**

- Supports Secretarial commitment to DNFSB Recommendation 97-1, safe storage of U-233.

Program Direction *(FY 1999 $249.6; FY 2000 $246.5)* **-$3.1**

- Continue reductions in support contracts while supporting cost of living increases for a smaller federal workforce. -$3.1

Use of Prior Year Balances **+$47.0**

Other Defense Activities

Mission

The Other Defense Activities appropriations account includes a variety of defense-related programs managed by different organizations. The Offices of Nonproliferation and National Security, Worker and Community Transition, Fissile Materials Disposition, and Naval Reactors are funded completely by this appropriation. In addition, this account provides funding for the national security related activities of the Office of Environment, Safety and Health and the Office of Hearings and Appeals.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Other Defense Activities					
Nonproliferation and national security	699,370	697,130	767,300	70,170	10.1%
Worker and community transition	61,159	29,900	30,000	100	0.3%
Fissile materials control and disposition	103,796	168,960	200,000	31,040	18.4%
Environment, safety & health	94,000	91,500	92,000	500	0.5%
Office of hearings and appeals	2,300	2,400	3,000	600	25.0%
Independent assessment of DOE projects	35,000	——	——	——	——
Russian plutonium disposition	——	200,000	——	-200,000	-100.0%
Russian uranium disposition	——	325,000	——	-325,000	-100.0%
Naval reactors	670,500	670,189	665,000	-5,189	-0.8%
Subtotal, Other defense activities	1,708,225	2,236,779	1,812,000	-424,779	-19%
Use of prior year balances & other adjustments	-6,047	-35,692	-20,000	15,692	44%
Total, Other Defense Activities	1,702,178	2,201,087	1,792,000	-409,087	-18.6%
Full time equivalent employment (FTEs)	*846*	*736*	*964*	*228*	*31.0%*

Nonproliferation and National Security

Mission

To reduce the danger to U.S. National Security posed by Weapons of Mass Destruction (WMD) by preventing the spread of WMD materials, technology, and expertise; detecting the proliferation of WMD worldwide; reversing the proliferation of nuclear weapons capabilities; and responding to WMD emergencies.

Program Overview

The President has made nonproliferation one of the nation's highest priorities. For FY 2000, he has proposed an expanded, multi-agency threat reduction initiative for the Russian WMD

complex. The Department of Energy is the preeminent United States agency providing operational, technological and analytical support to international efforts to prevent the proliferation of Weapons of Mass Destruction (WMD).

The **Arms Control and Nonproliferation** program pursues the following major priorities: 1) secure nuclear materials and expertise in Russia, the Newly Independent States (NIS), and the Baltics; 2) limit weapons-usable fissile materials worldwide; 3) promote transparent and irreversible nuclear reductions; 4) strengthen the nuclear nonproliferation regime; and 5) control nuclear exports. In the last several years, we have witnessed a dramatic growth in cooperation between the Department and the Russian Federation in programs designed to improve materials protection, control and accountability, and to prevent "brain drain."

The **Nonproliferation, Research and Development** program is essential for stable long-term research and the development of unique science and technology competencies needed for increasing demands in such critical areas as arms control, nonproliferation, domestic nuclear safeguards and security, energy security, and emergency management. Current research and development efforts include the design, development, and production of operational sensor systems needed for early detection of indigenous WMD production, treaty monitoring, nuclear weapon and chemical and biological weapon proliferation detection, and nuclear warhead dismantlement initiatives. Additional resources are needed to meet the increased threat of potential terrorist use of chemical and biological weapons and to initiate the construction of the Nonproliferation and International Security Center at Los Alamos National Laboratory.

Increased technical support is needed in the **Safeguards and Security Program** for departmental field elements in light of increasing demands on facilities from the implementation of arms control accords as well as the continued requirement for more cost-efficient and effective security. Compliance with automatic declassification of Executive Order 12958 will require the Department to thoroughly review documents which may be marked as containing only National Security Information, but which also may contain unmarked Restricted Data and Formerly Restricted Data concerning nuclear weapons design and the military utilization of nuclear weapons. If this review is not done, such documents could be inadvertently released under the automatic declassification provisions of the Executive Order.

The **International Nuclear Safety And Cooperation Program** is critical to achieving lasting improvements in nuclear safety culture and infrastructure development, particularly for the 65 Soviet-designed reactors operating in nine former Soviet Union countries. The program is working to improve the capabilities of nuclear power plant operators to establish sound operational procedures, and to develop methods for responding to operational abnormalities. The program also seeks to improve the physical condition of the plants, particularly their safety systems. Additionally the program provides professionals involved in the design, operation, and regulation of nuclear power plants with the techniques and expertise required to conduct safety analyses that are consistent with Western practices. Lastly, the program provides assistance to host countries to develop the domestic liability legislation needed to enable a broader involvement of U.S. private industry and to establish a strong, independent regulatory authority. Pacific Northwest National Laboratory is the technical manager for this program where more than 200 individual projects have been initiated with the participation of 20 Soviet-designed plant sites and 46 U.S. commercial companies to provide equipment, technical expertise, and services to improve safety. The program also assists other federal agencies that carry out related activities such as the cessation of weapons grade

plutonium production in Russia and a variety of projects supporting shutdown of the Chernobyl nuclear power plant.

The **HEU Transparency Program** supports implementation of U.S. nonproliferation policy by providing confidence that material is derived from dismantled Russian weapons.

Budget Overview

The President is proposing an expanded, multi-agency threat reduction initiative in FY 2000. As cooperation increases with the Russian Federation and the Newly Independent States (NIS), additional budgetary resources are required to expedite the expansion and enhancement of NIS nonproliferation activities in critical areas such as plutonium and highly enriched uranium transparency issues, nuclear materials protection, control and accounting, export control, and preventing the spread of WMD technology and expertise. This is particularly urgent in light of the impact of the collapse of the Russian economy on the Russian Government's efforts to prevent leakages of nuclear materials and expertise. The FY 2000 Nonproliferation and National Security budget request increases to $747.3 million, providing additional budgetary resources for urgently required nonproliferation activities in the Russian Federation and the NIS; increased resources to stem the proliferation of chemical and biological weapons; and to reduce the danger of nuclear smuggling and the associated potential for nuclear terrorism.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Nonproliferation and national security					
Verification and control technology					
Nonproliferation and verification R&D	204,859	210,000	221,000	11,000	5.2%
Arms control	234,600	256,900	296,000	39,100	15.2%
Total, Verification and control technology	439,459	466,900	517,000	50,100	10.7%
Nuclear safeguards and security	47,200	55,200	59,100	3,900	7.1%
International Nuclear Safety	70,000	30,000	34,000	4,000	13.4%
Highly Enriched Uranium Transparency Implement.	15,186	13,580	15,750	2,170	16.0%
Security investigations	30,000	30,000	30,000	——	——
Emergency management	20,000	21,000	21,000	——	——
Program direction	77,525	80,450	90,450	10,000	12.4%
Subtotal, Nonproliferation and national security	699,370	697,130	767,300	70,170	10.1%
Use of prior year balances	-1,163	-6,176	——	6,176	100%
Offset to user organizations	——	-20,000	-20,000	——	——
Total, Nonproliferation and national security	698,207	670,954	747,300	76,346	11.4%
Full time equivalent employment (FTEs)	*315*	*289*	*286*	*-3*	*-1.0%*

FY 2000 Budget Request

The FY 2000 Other Defense Activities budget request for the Office of Nonproliferation and National Security is $747.3 million, a $76.5 million increase over FY 1999, primarily due to

an increase for Arms Control in response to the President's proposal for an expanded threat reduction initiative in FY 2000.

Nonproliferation and Verification Research and Development - $221.0 million

This program applies unique science and technology development capabilities at the Department's National Laboratories to reduce the threat to U.S. national security posed by WMD. This program's FY 2000 budget request of $221.0 million continues current research and development activities to provide the technology and tools to assist in arms control treaty monitoring (including improving the ability to monitor the Comprehensive Test Ban Treaty) and the technologies to detect the proliferation of WMD as well as the diversion of WMD materials. The FY 2000 request also includes $31.2 million to develop and demonstrate the technologies to prepare for and respond to potential terrorist use of chemical and biological weapons (CBW) domestically and $6.0 million to initiate the design of the Nonproliferation and International Security Center (NISC) at LANL.

Arms Control - $296.0 million

Increases to **Arms Control** program's FY 2000 budget request of $40 million, for a total request of $296.0 million reflect expanded efforts to implement threat reduction and nonproliferation activities within the Russian Federation to improve materials protection, control and accountability at every facility where at risk weapons-usable nuclear materials are stored and to which they are transported. Funds are also provided to prevent the spread of WMD expertise; assist former Soviet republics in establishing and enhancing nuclear material export control systems; provide technical support for long-term monitoring of Iraqi facilities and other nuclear safeguards and emergency programs of the International Atomic Energy Agency (IAEA) and improving IAEA safeguards' effectiveness and efficiency for IAEA inspections; limit weapons-usable fissile materials worldwide by converting additional highly enriched uranium fueled reactors to low enriched uranium; and establish transparent and irreversible nuclear reductions by fully implementing transparency measures and U.S. rights at all Russian facilities engaged in activities associated with the U.S.-Russian HEU Purchase Agreement and the Plutonium Production Reactor Agreement.

The **Arms Control** program includes critical analytical, technical expertise, and operational support in the following areas: $2.2 million for **spent fuel activities with the Democratic Peoples Republic of Korea** (North Korea) to continue a technical dialogue to implement a nuclear spent fuel maintenance plan; $16.0 million for **spent fuel activities in Kazakhstan** to ensure the safe, secure storage of spent fuel at the BN-350 Reactor in Aktau and complete canning of the 2,400 spent fuel rods in the pool; $60.0 million for the **Initiatives for Proliferation Prevention Program** and the **Nuclear Cities Initiative**; $145.0 million for **Materials Protection, Control and Accounting** to continue to install MPC&A upgrades for defense-related sites in Russia, including 5 major uranium and plutonium cities, 3 nuclear weapons complex sites, 10 Russian Navy projects, and security upgrades in the transportation sector, and continue to install MPC&A upgrades to Russian civilian and regulatory-related sites; funding to implement the Nuclear Nonproliferation Treaty; Comprehensive Test Ban Treaty; Fissile Material Cutoff Treaty negotiations; Biological Weapons Convention; IAEA inspection of excess U.S. fissile materials at DOE facilities; Mutual Reciprocal Inspection agreements with Russia on plutonium and highly enriched uranium; and reciprocal dismantlement, transparency, and irreversibility agreements with Russia.

Program Overview

The Other Defense Activities program of the Office of Environment, Safety and Health is discussed in this section and is concentrated in three business functions -- Oversight, Health Studies, and the Radiation Effects Research Foundation (RERF) -- as well as a portion of Environment, Safety and Health's Program Direction funding.

In addition to the funding provided under this account, Environment, Safety and Health receives funding for non-defense related activities from the Energy Supply appropriation, and funding from the Defense Environmental Restoration and Waste Management appropriation for public health activities conducted at sites where environmental cleanup is underway.

The **Oversight** function provides independent information and analysis that provides the Department and its stakeholders an accurate and comprehensive understanding of the effectiveness, vulnerabilities, and trends of the Department's environment, safety, health, and safeguards and security performance. The Oversight function includes the Oversight program (Site Residents Program, Safety Management Assessments, Accident Investigation and Analysis), the Price-Anderson Enforcement program, and the Departmental Representative to the Defense Nuclear Facilities Safety Board. The primary goal of these programs is to promote constructive change in the Department's environment, safety, health, safeguards, and security management programs through a continuous cycle of independent assessments, analysis, reports, and follow-up validation.

The **Health Studies** program promotes the health of Department of Energy workers and communities and supports continued efforts to understand the effects of radiation on humans. It is comprised of four programs**: Occupational Medicine**, which is focused on identifying and preventing occupationally-related health effects among worker populations; **Public Health Activities**, which support health studies, health education and promotion, and other public and occupational health related initiatives at DOE sites; **Epidemiologic Studies**, which include the analysis of worker injury and illness data to identify emerging health issues associated with job exposures and to evaluate the impact of health and safety practices at departmental facilities; and **International Health Programs**, which includes health and environmental programs supporting the expanded knowledge of health effects resulting from radiation exposure in the Marshall Islands and the former Soviet Union.

The **Radiation Effects Research Foundation (RERF)** is the successor of the Atomic Bomb Casualty Commission, which was established to investigate the effects of radiation exposure to survivors of the atomic bombings of Hiroshima and Nagasaki. Funding for the RERF is provided by the government of Japan, through the Ministry of Health and Welfare, and the U.S. Government, through DOE. The objective of the RERF is to collect data, for peaceful purposes, on the medical effects of radiation on man, and provide the basis for establishing radiation protection standards and practices worldwide.

The Program Direction account includes the salaries, benefits and travel for 221 Full Time Equivalents, approximately 64 percent of the Environment, Safety and Health federal workforce.

Budget Overview

The FY 2000 budget request for the Other Defense Activities Environment, Safety and Health programs is $92.0 million, which is $0.5 million or less than 1 percent less than the FY 1999 comparable amount. Of the FY 2000 request, approximately 13.9 percent is for Oversight, 44.5 percent is for Health Studies, 14.7 percent is for the Radiation Effects Research Foundation, and 26.9 percent is for Program Direction.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Environment, Safety and Health					
Office of environment, safety and health (defense) .	74,000	66,731	67,231	500	0.7%
Program direction	20,000	24,769	24,769	——	——
Subtotal, Environment, Safety and Health	94,000	91,500	92,000	500	0.5%
Use of prior year balances	-476	-2,108	——	2,108	100.0%
Total, Environment, Safety and Health	93,524	89,392	92,000	2,608	2.9%
*Full time equivalent employment (FTEs)	*200*	*226*	*221*	*-5*	*-2%*

FY 2000 Budget Request

The Defense Environment, Safety and Health Oversight program is requesting $11.8 million in FY 2000, which is $1.1 million or 9 percent greater than the FY 1999 comparable amount. The Oversight program will conduct an ongoing program of environmental audits. The program will continue to promote effective line management performance through the course of independent assessments and reporting, will identify issues appropriate for the attention of senior managers, provide updates on the progress of corrective actions, ensure accidents are adequately investigated. The Enforcement program will continue to enforce nuclear safety rules under the Price-Anderson Amendments Act.

The Health Studies program is requesting $41.0 million in FY 2000, which is equal to the FY 1999 comparable amount. The Health Studies program will continue the Marshall Islands medical surveillance program ($6.8 million), joint U.S.-Russian studies of radiation health effects and epidemiological surveillance of DOE workers. In addition, the request supports the Public Health Activities conducted to assess the health of populations working or living near to DOE sites. These activities are coordinated with the balance of Public Health Activities funded within the Defense Environmental Restoration and Waste Management appropriation under a single memorandum of understanding with the Department of Health and Human Services. The FY 2000 request also fully supports the DOE former workers program, which provides occupational medical surveillance pilots at ten sites throughout the complex.

The Radiation Effects Research Foundation is requesting $13.5 million in FY 2000, which is $0.5 million or 3.5 percent less than the FY 1999 comparable level. The RERF will continue to monitor the effects of radiation resultant from the atomic bombings, and to promote the welfare of the atomic bomb survivors in conjunction with the Japanese government.

The FY 2000 request provides $24.8 million in Program Direction funding, which is equivalent to the FY 1999 comparable level. This funding provides for the salaries, benefits and travel associated with 221 Full Time Equivalents.

The performance objectives of the Defense Environment, Safety and Health programs are largely qualitative, rather than quantitative. The programs will continually strive to provide excellent Department-wide environment, safety, health, safeguards and security support by a consistent, credible oversight process, preventing the recurrence of worker injuries and

environmental damage, ensuring follow-up to corrective actions, promoting high quality workplace medical services, and employing epidemiologic analysis to analyze dose-response relationships and the effect of exposures and site conditions on the health of workers and offsite populations. Success at these efforts will be measured, in part, by decreased rates of occupational injury or illness, downward trends in recurrence of accidents and environmental releases , significant reduction in environment, safety, health, safeguards and security issues, and decreased number of radiological exposures and safety violations.

Highlights of Program Changes ($ in millions)

Oversight *(FY 1999 $11.7; FY 2000 $12.8)* **+$1.1**

Increase in Oversight reflects increased site reviews and a more robust nuclear safety enforcement program (+$0.2), as well as a program of environmental audits required by Executive Order (+$0.8). In addition, there is an increase in efforts associated with responding to Defense Nuclear Facilities Safety Board. (+$0.1)

Radiation Effects Research Foundation *(FY 1999 $14.0; FY 2000 $13.5)* **-$0.5**

Decrease reflects increased efficiencies at the Radiation Effects Research Foundation and the implementation of Blue Ribbon Panel Recommendations**.**

Use of Prior Year Balances (FY 1999 -$2.1; FY 2000 $0.0) **+$2.1**

Increase reflects that FY 1999 activities are supported by the use of prior year balances, whereas the FY 2000 activities will not be.

Worker and Community Transition

Mission

The Office of Worker and Community Transition was formed in September 1994 to ensure the fair treatment of workers and communities affected by changing Department of Energy missions. This program was established in accordance with Section 3161 of the Defense Authorization Act of 1993.

Program Overview

The Worker and Community Transition program supports contractor work force restructuring activities related to the defense mission, and provides local impact assistance to those communities affected by work force restructuring plans. The program also leads and manages the development of short and long-term programs and initiatives that identify assets that are excess to current Department needs and are potentially available for sale, transfer, or reuse.

More specifically, the program provides overall coordination and final recommendation to the Secretary on approval of work force restructuring plans. These activities ensure effective work force planning that identifies and retains critical skills, knowledge and abilities, and provides appropriate public notice for work force restructuring. Strategies include providing preference to displaced workers for new hiring by the Department and providing retraining for the Environmental Restoration and Waste Management program or other employment opportunities. The program develops effective and efficient initiatives that limit involuntary layoffs and provides appropriate voluntary separation incentives, including severance enhancement, retraining assistance, outplacement assistance, relocation assistance, and extension of medical benefits. Consistent with Section 304 of the FY 1998 Energy and Water Development Appropriations Act, this program request will cover all enhanced worker benefits provided under Section 3161.

Additionally, Congress has identified this program as the only authorized source of funding for local impact assistance to communities affected by work force restructuring plans. This includes many sites that have transitioned from Defense Programs management to Environmental Restoration and Waste Management. The Worker and Community Transition program assists communities affected by Departmental work force changes by developing policies and facilitating assistance for such communities to perform economic transition activities.

The functions of the Office of Asset Management were added to the Office of Worker and Community Transition in FY 1997. Asset Management functions will continue ongoing efforts for pilot project proposals, such as recovery of precious metals from weapons components and electronic scrap recycling and use, which are designed to provide a financial return to the federal government through the disposition of the assets as well as stimulating regional and local economic development. Reindustrialization efforts that transition excess DOE facilities for use in commercial enterprises at sites such as Oak Ridge and Mound, will be an area of increasing activity.

The program successfully managed the reduction of about 46,000 contractor personnel between FY 1993 and FY 1998. Nearly three fourths of separations to-date have been voluntary, with an average (including workers separated through attrition) separation cost of approximately $18,000 per position. When attrition is excluded, average separation costs have been approximately $24,000. Annual savings to-date from these reductions are estimated to exceed $3.3 billion in salaries and benefits. In addition, the community transition activities will create or retain over 17,000 private sector jobs by the end of 2001.

Budget Overview

The Office of Worker and Community Transition will manage the Department's effort to reduce the size of the contractor work force and implement more efficient contract mechanisms, in parallel with future hiring, with a potential net impact of 2,000 workers in FY 2000. This 2 percent per year rate of reduction is consistent with the current rate of change in the Department's contractor work force, and represents significant stability in the work force, particularly when compared with the reductions experienced during the mid-1990s. The Office is also developing workforce strategies that will facilitate early closure of Fernald, Mound, and Rocky Flats. Community transition assistance is expected to create approximately 1,700 jobs within affected communities during FY 2000 at a cost, based on past performance and bench marking to private sector best practices for job replacement, of less than $10,000 per position.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Worker and community transition					
Worker and community transition	57,659	26,000	26,500	500	+1.9%
Program direction	3,500	3,900	3,500	-400	-10..3%
Subtotal, Worker and community transition	61,159	29,900	30,000	100	+0.3%
Use of prior year balances	-11	-1,698	——-	1,698	100%
Total, Worker and community transition	61,148	28,202	30,000	1,798	6.4%
Full time equivalent employment (FTEs)	*27*	*24*	*22*	*-2*	*-8.3%*

Of the FY 2000 budget request, current estimates are that approximately 31 percent will fund work force restructuring requirements, 51 percent will provide community transition assistance, and 12 percent will fund program direction, which includes the role of asset management. If additional work force reductions are required, the portion necessary for work force enhanced benefits could increase with a corresponding reduction in funds available for community transition.

FY 2000 Budget Request

The FY 2000 budget request for the Worker and Community Transition program is $30.0 million. In FY 2000, the work force restructuring portion of the program is expected to be funded at $9.4 million. An important work force restructuring goal is to mitigate the impacts on displaced workers while humanely and cost-effectively managing the transition to a reduced work force that will better meet ongoing mission requirements. The program will gauge the effectiveness of the work force planning process at each site by holding to 2 percent or less the number of jobs vacated through incentives and non-retirement separations that have to be filled by employees from outside the DOE complex. In addition, they will limit involuntary termination of employment at DOE defense nuclear facilities to no more than 60 percent of positions eliminated.

In FY 2000, the community transition portion of the program is expected to be funded at $17.1 million. Community transition assistance aims to mitigate the impacts on communities from contractor work force restructuring at Department sites by supporting local community reuse organizations, to promote rapid and effective defense conversion with new private sector jobs for displaced workers and new businesses for the community. During FY 2000, $6.0 million will be provided to the State of Idaho under the terms of a settlement agreement and $5.0 million will be provided to the Mound Facility to support an accelerated cleanup and closure of the facility which will save the Department future costs of maintaining and safeguarding that facility. The Office of Worker and Community Transition expects to provide additional community transition funding to nine other sites based on grant requests that are reviewed and approved by the Department of Commerce/Economic Development Administration. Support for local community transition activities will create or retain approximately 1,700 new jobs in FY 2000.

In FY 2000, the program direction portion which provides for the federal management and administrative personnel to carry out the Worker and Community Transition mission will be funded at $3.5 million. Within program direction, the leadership and management of the asset management program will be continued. The goal of asset management is to achieve at least a two to one return on reinvested proceeds from the sale or lease of underutilized assets associated with the asset management pilot program and other reindustrialization activities**.**

Highlights of Program Changes ($ in millions)

Worker and Community Transition *(FY 1999 $28.2; FY 2000 $30.0)* **+$1.8**

Community Transition Assistance *(FY 1999 $16.6; FY 2000 $17.1)* +$0.5

The requested increase will provide opportunities to support limited additional high return proposals to offset employment reductions in affected communities.

Use of prior year balances **+$1.7**

Fissile Materials Control and Disposition

Mission

In the aftermath of the Cold War, significant quantities of weapons-usable fissile materials (primarily plutonium and highly enriched uranium) have become surplus to national defense needs both in the United States and Russia. The danger exists not only in the potential for proliferation of nuclear weapons, but also in the potential for environmental, safety, and health consequences if the surplus fissile materials are not properly managed. The Department of Energy's Office of Fissile Materials Disposition is responsible for implementing a path forward for the storage and disposition of U.S. weapons-usable fissile materials and for providing key negotiation and technical support for efforts to attain reciprocal actions for the disposition of surplus Russian plutonium. The efforts undertaken by the Office of Fissile Materials Disposition will reduce the number of sites where surplus weapons-usable materials are stored, irreversibly dispose of the nation's surplus plutonium and uranium, and obtain reciprocal action for the disposition of Russian plutonium.

Program Overview

In January 1997, the Department issued a Record of Decision regarding the storage of all weapons-usable fissile material and the disposition of surplus plutonium.

The Department is reducing the number of sites where plutonium is stored through a combination of storage and disposition alternatives. Surplus plutonium pits from Rocky Flats and the Savannah River Site (SRS) have been moved to Pantex to be stored, along with other surplus pits residing at Pantex, in upgraded facilities.

In August 1998, the Department issued an amended Record of Decision to remove all surplus non-pit plutonium from Rocky Flats by FY 2002, in accordance with the Department's June 1998 Accelerated Closure Pilot Project that calls for closing the site by FY 2006. The plan calls for the Department to transfer surplus non-pit plutonium from Rocky Flats to SRS for storage in a modified building 105-K.

The Department is proceeding with a hybrid plutonium disposition strategy that includes immobilization of surplus weapons plutonium with ceramic material and burning of surplus plutonium as mixed oxide (MOX) fuel in existing domestic commercial reactors. The Department plans on immobilizing non-pit surplus plutonium which is not suitable for use in MOX fuel without extensive purification, but reserves the option to immobilize the entire 50mt of declared surplus. The success of these efforts will directly contribute to national security, enhance cooperation with Russia, and attain reciprocal action for the disposition of Russian weapons plutonium. The Administration will not construct new facilities for disposition of U.S. plutonium unless there is significant progress on plans for plutonium disposition in Russia.

The Department is working with Russia on programs to facilitate the disposition of Russian plutonium. The Department is providing key negotiation and technical support for efforts toward attaining a U.S./Russian accord for the disposition of Russian plutonium.

Budget Overview

The FY 2000 budget request for the Fissile Materials Disposition program is $200 million, which is approximately 19% over the FY 1999 funding level excluding the one-time emergency appropriation to support Russian Plutonium Disposition. The FY 2000 request supports continuing U.S. surplus materials disposition activities at the FY 1999 level; starting design of the Immobilization and Associated Processing Facility; initiating U-233 disposition; procuring MOX fuel lead test assembly equipment; and increasing FTEs in the field to provide oversight of three plutonium disposition facilities. Final selection of the sites for these facilities will be made in a Record of Decision scheduled for the Spring of 1999.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Fissile materials control and disposition					
Fissile materials control and disposition	99,451	164,372	192,657	28,285	17.2%
Program direction	4,345	4,588	7,343	2,755	60.0%
Subtotal, Fissile materials control and disposition	103,796	168,960	200,000	31,040	18.4%
Use of prior year balances	-119	-1,469	——	1,469	100%
Total, Fissile materials control and disposition	103,677	167,491	200,000	32,509	19.4%
Russian plutonium disposition	0	200,000	0	-200,000	-100.0%
Full time equivalent employment (FTEs)	*27*	*32*	*39*	*+7*	*21.9%*

FY 2000 Budget Request

The request of $200.0 million represents a decrease of $167.5 million below the FY 1999 appropriation. In FY 1999, the program received a one-time emergency appropriation of $200.0 million to support Russian plutonium disposition. Excluding the emergency appropriation, the FY 2000 budget request of $200 million actually represents an increase of 19% or $32.5 million. The FY 2000 funding level will allow the program to proceed with the design of key U.S. surplus plutonium disposition facilities by initiating Title I design for the **Immobilization and Associated Processing Facility** *(FY 1999 $0.0; FY 2000 $21.8)*, complete Title I and initiate Title II design for the **Pit Disassembly and Conversion Facility** *(FY 1999 $20.0; FY 2000 $28.8)* and the **Mixed Oxide Fuel Fabrication Facility** *(FY 1999 $28.0; FY 2000 $12.4)*. The program will upgrade surplus plutonium pit storage facilities at Pantex; continue the transfer of surplus highly enriched uranium to the United States Enrichment Corporation (USEC) for down blending to low enriched uranium for sale and subsequent use in commercial nuclear reactors; continue plans and initiate testing for disposition of 33mt of off-specification HEU by blend down and irradiation in TVA reactors; plan for the blend down and sale of 10mt of HEU currently under IAEA safeguards; and issue a draft environmental impact statement on disposition of 1mt of U-233. The program will continue U.S./Russian small scale tests and demonstrations on plutonium technologies and begin implementation of a U.S./Russian accord for plutonium disposition in Russia.

Highlights of Program Changes ($ in millions)

Fissile Materials Disposition *(FY 1999 $167.5; FY 2000 $200.0)* **+$32.5**

- Start of operations at the upgraded storage facility at Pantex for surplus pit materials. +$3.4
- Environmental analyses associated with the disposition of U-233. +$1.4
- Start of Title I design for the Immobilization and Associated Processing Facility, U-233 disposition activities, and lead test assembly equipment for the MOX fuel approach +$23.9

- ❖ Increase for 14 additional FTEs over the FY 1999 base funding for 25 FTEs (7 FTEs are funded in FY 1999 with prior year balances). Of the 14 FTEs, 11 FTEs are in the field for oversight and project management of three plutonium disposition facilities. Three FTEs are in Headquarters to support Russian activities. +$2.3

Use of Prior Year Balances **+$1.5**

Russian Plutonium Disposition *(FY 1999 $200.0; FY 2000 $0.0)* **-$200.0**

- ❖ One-time emergency appropriation in FY 1999 to support Russian plutonium disposition. -$200.0

Office of Hearings and Appeals

Mission

The Office of Hearings and Appeals (OHA) is responsible for all of the Department's adjudicatory processes, other than those administered by the Federal Energy Regulatory Commission. The goal of OHA is to issue prompt, high quality decisions that fairly and equitably resolve the matters that are brought before it.

Program Overview

Over the years, OHA has gained jurisdiction over a wide variety of matters including: Freedom of Information Act and Privacy Act Appeals, evidentiary hearings to determine an employee's eligibility for a security clearance, appeals of initial agency decisions on whistle blower complaints, and requests for exception from DOE regulations and orders, such as reporting requirements to Departmental elements. Funding for this activity is being sought in Energy and Water Development appropriations. Beginning in FY 1999, OHA's whistle blower responsibility will be expanded through amendments to the regulations covering DOE's Contractor Employee Protection (Whistle blower) Program, which shift the responsibility for conducting investigations of whistle blower complaints and issuing initial agency decisions from the Office of the Inspector General to OHA.

Budget Overview

Until FY 1996, the Office of Hearings and Appeals always received full funding for its activities through the Interior and Related Agencies appropriations bill. For FY 1996 and FY 1997, Congress funded only activities arising from the Emergency Petroleum Allocations Act of 1973 (EPAA), and directed OHA to charge Departmental elements (directed at Energy and Water Development funds) for adjudicative services. For FY 1998 and FY 1999, OHA received funding for some of its non-EPAA related adjudicative services through this appropriation.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Office of hearings and appeals	2,300	2,400	3,000	600	+25.0%
Full time equivalent employment (FTEs)	*21*	*21*	*25*	*4*	*+19.0%*

FY 2000 Budget Request

The Office of Hearings and Appeals is seeking $3.0 million of new authority in Other Defense Activities to investigate and adjudicate whistle blower complaints and to consider appeals of other Departmental actions, including determinations issued under the Freedom of Information and Privacy Acts and adverse security clearance determinations. This request is

in addition to a $2.0 million request for Interior funds to finance its oil overcharge activities (EPAA). Most expenses are related to its professional staff with Personnel Compensation and Benefits expenses equal to $2.4 million, and Support Services equal to $0.6 million. Support services are primarily provided within the Department's Working Capital Fund, and include rent, supplies, printing and communication and information technology. In FY 2000, OHA expects to issue 250 high-quality determinations and make all of its decisions available on the Internet to interested persons, usually within one day of issuance.

Highlights of Program Changes ($ in millions)

Office of Hearings and Appeals *(FY 1999 $2.4; FY 2000 $3.0)* **+$0.6**

This increase reflects an increase of 4 FTEs associated with a portion of the increased responsibilities given to OHA under changes to the DOE Contractor Employee Protection (Whistle blower) Program and an adjustment for the annual pay raise**.**

Naval Reactors

Mission

Naval Reactor's mission is to provide the Navy with safe, long-lived, militarily-effective nuclear propulsion plants in keeping with the nation's defense requirements, and to ensure their continued safe and reliable operation.

Program Overview

Naval Reactor's responsibility extends to all aspects of Naval nuclear propulsion — from technology development through reactor operations to ultimately, reactor plant disposal. The Program's efforts are critical to the continued success of the numerous reactors in operating submarines and surface ships, comprising more than 40 percent of major Navy combatants and the successful development of the reactor plants for the VIRGINIA class submarine and a planned new aircraft carrier, CVNX. Naval Reactors is responsible for more reactors than the entire U.S. commercial nuclear power generating industry and almost as many reactors as the next two largest commercial nuclear power generating nations in the world combined (France and Japan).

The program will maintain an integrated, comprehensive, and far-sighted analytical, development and testing effort for existing and future reactor plants. This will be accomplished in a number of ways, to include: continuously test, verify, and refine reactor technology, and integrate new technologies and techniques into existing system and component designs to improve overall reactor plant performance, reliability and longevity; rigorously test materials, fuel, cores, components and systems; and develop simplified, more affordable reactors with improved power capabilities, increased endurance, and added dependability.

Continuing development efforts are yielding greater capabilities. Major efforts for the near future include upgrades to existing components and equipment to help extend operating ship lifetimes and improve overall reactor plant performance, development of the reactor for the Navy's new CVNX aircraft carrier, and development/testing of the next generation reactor components and systems for the Navy's new VIRGINIA class attack submarine, including the first true life-of-the-ship core, which will obviate the need for expensive refuelings, and the new concept steam generator, which should greatly reduce corrosion concerns.

The Program's cost-saving initiatives led to shutting down six of eight land-based test/ research and development prototype plants. Work in this budget is aimed at inactivating and laying up the shut down plants to place them in an environmentally benign state pending full dismantlement at some future date.

Budget Overview

The FY 2000 budget request for the Naval Reactors program reflects the above described activities. Naval Reactors' major priorities, in order, include: 1) support the current operating fleet (location of the majority of the funds); 2) continue development of the VIRGINIA class submarine plant development and testing work, 90 percent complete by the end of FY 2000; and 3) inactivating six shutdown prototypes.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 1999 vs. FY 2000	
Naval Reactors					
Naval reactors development	650,420	650,089	644,400	-5,689	-0.9%
Program direction	20,080	20,100	20,600	500	2.5%
Subtotal, Naval Reactors	670,500	670,189	665,000	-5,189	-0.8%
Use of prior year balances	-148	-4,049	——	4,049	100%
Total, Naval Reactors	670,352	666,140	665,000	-1,140	-0.2%
Full time equivalent employment (FTEs)	*207*	*204*	*201*	*-3*	*-1.5%*

FY 2000 Budget Request

The FY 2000 Other Defense Activities budget request for Naval Reactors is $665.0 million. The budget request represents the amount needed for the following principle efforts:

- Conduct planned development, testing, and evaluation in the areas of nuclear physics, steam generators, instrumentation and control, materials, reactor and reactor plant design, and manufacturing and inspection methods to ensure reactor plant service life meets Navy goals for extended warship operation: 50 years for aircraft carriers, 40 years for strategic submarines, and 30 years for attack submarines.
- Complete scheduled reactor and reactor plant analyses and analysis methods improvements in the areas of nuclear physics, reactor configuration and design, analytical modeling, and thermal hydraulics to ensure safety and reliability of the reactor plants in the Navy's nuclear powered warships so they can fulfill their national defense mission.
- Accomplish planned core and reactor component/system design and technology development efforts to support the Navy's acoustic requirements.
- Maintain a utilization factor of at least 90 percent for prototype plants, ensuring their availability for scheduled testing, training, and servicing needs.
- Meet FY 2000 cost and schedule goals to safely and responsibly inactivate six shutdown land-based reactor plants in support of the Department's environmental clean-up goals.

- Attain goals of zero personnel exceeding federal limits for radiation exposure and recording no significant findings resulting from environmental inspections by state and federal regulators.
- Complete 90 percent of the New Attack Submarine plant development and testing work by the end of FY 2000.
- Complete initial development efforts on a reactor plant for a new aircraft carrier.

Highlights of Program Changes ($ in millions)

Materials Development and Verification *(FY 1999 $119.5; FY 2000 $124.8)* **+$5.3**

The increase primarily reflects the increased emphasis required to support resolution of emergent issues arising from recently identified performance findings, as well as increased testing to support qualification for extended lifetime and increased cost of irradiations testing in the Advanced Test Reactor.

Reactor Technology & Analysis *(FY 1999 $192.0; FY 2000 $196.0)* **+$4.0**

The increase primarily reflects initiating concepts work for a reactor plant intended for a new aircraft carrier, and to provide improved shield design which eliminates lead from shielding, for use in a reactor plant intended for a new aircraft carrier**.**

Evaluation and Servicing *(FY 1999 $163.6; FY 2000 $149.4)* **-$14.2**

The decrease reflects a reduction in inactivation work on the shutdown prototype reactor plants.

Use of Prior Balances **+$4.0**

Environmental Management

Mission

After the Department of Energy ceased most nuclear weapons production operations in the late 1980s, the Department established the Office of Environmental Management (EM) to cleanup and safely manage the legacy of contamination resulting from the operation, for nearly five decades, of the largest government-owned industry in the United States. EM now manages the thousands of contaminated areas and buildings, huge waste volumes, and nuclear material left over from the nuclear weapons production process and nuclear-related research efforts. In June 1996, EM began working toward a goal of completing cleanup at as many sites as possible within a decade. To reach this goal, EM began a planning process to establish the schedule and cost for each EM site to accomplish as much cleanup as possible by 2006. *Accelerating Cleanup: Paths to Closure*, documenting these cleanup plans, was published in June 1998.

The EM budget is now aligned with the *Paths to Closure*. All EM activities have been organized into projects, each of which has a defined scope, schedule, and cost. This information is detailed in project baseline summaries (PBSs). In addition, EM projects have been categorized within three decision units that focus on the end-date of the project: Site Closure, Site/Project Completion, and Post 2006 Completion. Science and Technology activities and Program Direction funding remain as separate decision units.

The FY 2000 request for Environmental Management includes $5,700.0 million for the base program and $228.0 million for privatization activities, for a total of $5,928.0 million. The base program request is $100.0 million greater than the FY 1999 level, and the request for privatization is essentially equal to the FY 1999 amount.

The FY 2000 level of funding ($5.928.0 million), $100 million higher than FY 1999, provides sufficient funds to be in compliance with applicable environmental and other requirements. EM will also address all urgent safety risks and continue to accelerate cleanup activities. At some sites, there is a small gap between compliance requirements and available funding. EM continues to strive for additional efficiencies and other measures to close this gap. EM will also continue to work with regulators to address this issue.

The budget request for FY 2000 consists of five appropriations: Defense Facilities Closure Projects ($1,054.5), Defense Environmental Restoration and Waste Management ($4,494.4), Defense Environmental Management Privatization ($228.0), Non-Defense Environmental Management ($330.9), and Uranium Enrichment Decontamination and Decommissioning Fund ($240.2). The total request is offset by a $420.0 million payment from the Defense Environmental Restoration and Waste Management appropriation into the Uranium Enrichment Decontamination and Decommissioning Fund.

Defense Facilities Closure Projects

Program Overview

In August 1997, the Secretary of Energy designated a number of sites as pilot sites for accelerated closure. Congress established the Defense Facilities Closure Projects appropriation in FY 1998 to fund those accelerated closure activities. In FY 2000, this appropriation includes four sites under the Ohio Field Office (Mound, Ashtabula, Battelle Columbus Laboratory, and Fernald), as well as the Rocky Flats Environmental Technology Site in Colorado. EM's goal is to cleanup these sites by 2006. After EM's cleanup mission is completed at these sites, no further Departmental mission is envisioned, except for limited long-term surveillance and maintenance (i.e., pump and treat), and the sites will be available for alternative uses.

Budget Overview

The FY 2000 budget request of $1,054.5 million for the Defense Facilities Closure Projects appropriation is approximately 18 percent of the total FY 2000 budget request of $5,928.0 million for Environmental Management (EM) programs. The FY 2000 budget request is $12.8 million, approximately 1 percent, above the comparable FY 1999 amount. The budget request consists of $397.3 million for the Ohio sites and $657.2 million for Rocky Flats.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Defense Facilities Closure Projects	995,885	1,041,740	1,054,492	12,752	1.2%

FY 2000 Budget Request

The strategy for all **Ohio** Field Office sites is to produce an environmentally restored end state by 2006, which makes the sites available for alternative, productive use. The FY 2000 request of $397.3 million for Ohio supports continued efforts in 25 projects at four major sites.

The **Ashtabula** site *(FY 1999 $15.4; FY 2000 $15.4)* will be released for unrestricted use and returned to the RMI Company by FY 2003. In FY 2000, over 11,000 cubic meters of contaminated soil will be treated, and three buildings will be decontaminated.

The **Columbus Environmental Management Project** *(FY 1999 $3.6; FY 2000 $8.8)* is comprised of the King Avenue and West Jefferson sites, which are privately owned by Battelle Memorial Institute. The King Avenue site was completed in FY 1998. The West Jefferson site will be transferred to Battelle Laboratories for unrestricted use by FY 2006. In FY 2000, decontamination activities and transuranic waste volume reduction will continue, as well as preparation for shipments of transuranic (TRU) waste to the Waste Isolation Pilot Plant (WIPP).

At the **Fernald** site *(FY 1999 $274.0; FY 2000 $280.6 million)*, the program's goal is to complete all remediation and place the site under institutional control by FY 2005. Key activities in FY 2000 include: continued waste placement in the on-site disposal facility; continued efforts to restore the Great Miami Aquifer; continued disposition of low level (LLW) and mixed low level waste (MLLW); continued facility decontamination and decommissioning (D&D), including completing the D&D of one complex; shipment of Operable Unit 1 waste; disposition of remaining low enriched nuclear material inventories;

and continued base services such as safety and health, emergency management, fire protection, utilities operations and security.

Finally, the **Mound Site** *(FY 1999 $88.0; FY 2000 $92.4)* will be transferred to the city of Miamisburg by FY 2006. The Mound site is partially funded from the Non-Defense Environmental Management Appropriation, but is predominantly funded from this appropriation. The FY 2000 request allows the site to continue transition from an active production plant to the safe shutdown and cleanup of the building and soil, leading to the disposition of real property. Activities include: full scale efforts to decontaminate four major buildings comprising the tritium complex, a critical path activity; completion of the safe shutdown of the environmental laboratory and nine non-radioactively contaminated buildings; completion of cleanup of the Explosives Prep Facility; continuation of base site-wide infrastructure service; and the continuation of storage and/or disposition of TRU, LLW, hazardous, and sanitary waste.

The current life-cycle baseline for the **Rocky Flats Environmental Technology Site** *(FY 1999 $657.2; FY 2000 $657.2)* results in site closure by FY 2010 at a total project cost of $7.3 billion. The Department and Rocky Flats have challenged themselves to achieve accelerated site closure by FY 2006 at an estimated total project cost of $6.0 billion. A critical path of work activities that support the accelerated closure includes the following: off-site shipment of Special Nuclear Material (SNM) and stabilized residues by FY 2002; deactivation and demolition of a plutonium building once the SNM is removed; shipment of transuranic waste to the WIPP beginning in FY 1999; treatment and shipment of low-level and mixed low-level waste; and remediation of contaminated sites as they become available. Specific activities in FY 2000 include: completing remediation of three release sites; decommissioning 34 facilities; continuing deactivation projects; continuing operation of the Plutonium Stabilization and Packaging System; continued shipping of plutonium residues and SNM offsite; providing site-wide landlord/infrastructure activities; storing, treating and disposing of TRU (at WIPP), MLLW, LLW, and hazardous waste; and procure shipping containers for shipment of oxides and metals.

Highlights of Program Changes ($ in millions)

Defense Facilities Closure Projects *(FY 1999 $1041.7; FY 2000 $1,054.5)* **+$12.8**

- Ohio *(FY 1999 $381.0; FY $397.3)* +$16.3
  - Increase at **Columbus Environmental Management Project** reflects initiation of decontamination operations at 2 areas on the West Jefferson Site, as well as on external sites, and associated project management increases. (+$5.3)
  - Overall increase at **Fernald** reflects increased volumes of waste generation and disposal due to increased remediation efforts, increased facility decontamination and decommissioning activities, and increased construction activities at the waste silos. This is offset by decreased activities to disposition nuclear material and the completion of the nuclear facility shutdown in FY 1999. (+$6.6)
  - Overall increase at **Mound** reflects acceleration to full scale efforts to decontaminate the tritium complex, increased decontamination efforts in other areas of the site, and an increase in project management, which reflects FY 1999 activities supported by prior year funding. This is offset

by decreases in the work off of legacy waste and in soils remediation. (+4.4)

- Year 2000 Transition Activities *(FY 1999 $3.5; FY 2000 $0.0)* -$3.5
  - Decrease reflects the completion of the Year 2000 transition activities in FY 1999.

Defense Environmental Restoration and Waste Management

Program Overview

The mission of the EM program is to clean up and safely manage the environmental legacy resulting from the production of nuclear weapons. EM has established a goal of cleaning up as many sites as possible by 2006. The FY 2000 budget request reflects the program's increased emphasis on site closure and project completion.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Defense Environmental Restoration & Waste Management					
Environmental Management	4,330,828	4,334,525	4,494,376	159,851	3.7%
Environment, Safety and Health - Health Studies	0	12,000	20,000	8,000	66.7%
Subtotal, Defense Environmental Restoration and Waste Management	4,330,828	4,346,525	4,514,376	167,851	3.9%
Use of prior year balances	-11,253	-25,958	0	25,958	100.0%
Pension Refund	0	0	-8,700	-8,700	N/A
Total, Defense Environmental Restoration and Waste Management	4,319,575	4,320,567	4,505,676	185,109	4.3%
Full time equivalent employment (FTEs)	*2,780*	*2,764*	*2,724*	*-40*	*-1.4%*

Budget Overview

The FY 2000 budget request for Environmental Management activities within the Defense Environmental Restoration and Waste Management appropriation is $4,494.4 million, a $160.0 million, or 4 percent, increase over the comparable amount for FY 1999. Approximately 22 percent of the FY 2000 budget request is for Site/Project Completion, 65 percent is for Post 2006 Completion, 5 percent is for Science and Technology, and 8 percent is for Program Direction. The FY 2000 budget request reflects the program's increased emphasis on site closure and project completion (i.e., finishing the work as quickly as possible). The Defense Environmental Restoration and Waste Management appropriation also includes funding for Health Studies conducted by the Office of Environment, Safety and Health.

FY 2000 Budget Request

Site/Project Completion

Of the $4,494.4 million requested in FY 2000 for Environmental Management activities, $980.9 million is for Site/Project Completion. This amount is $58.9 million, or 6 percent, less than the comparable FY 1999 amount. Within this account, funding will be provided for sites and/or projects that will be completed by FY 2006 at national laboratories and other facilities where DOE will continue to conduct missions beyond 2006. A total of 44 projects in this

account will be supported at sites under the management of the Albuquerque, Idaho, Oakland, Richland, and Savannah River Operations Offices.

Albuquerque *(FY 1999 $56.4; FY 2000 $46.8)* manages activities at the Sandia National Laboratory (SNL) in both California and New Mexico, the Kansas City Plant (KCP) in Missouri, the Maxey Flats site in Kentucky, the Pinellas Site in Florida, and the Pantex Site in Texas. A total of seven projects are supported with the FY 2000 request. Activities include: continuation of grants and cooperative agreements; continued groundwater treatment at KCP, Pantex, and Pinellas; continued remediation at Pantex and Sandia; annual payments for Pinellas post-contract medical, pension, and other contractor worker benefits; and the required potentially responsible party (PRP) payment for Maxey Flats.

At **Idaho** *(FY 1999 $108.6; FY 2000 $109.0)* activities are driven by the Idaho Settlement agreement. This agreement requires Idaho to ship a minimum of 3,100 cubic meters (65,000 cubic meters total inventory) of TRU waste offsite for disposal by December 31, 2002. Idaho plans to treat the remaining waste in the planned Advanced Mixed Waste Treatment Project, ship over 9,000 cubic meters of the stored TRU waste to WIPP for disposal by 2006, and remove all waste not later than the end of 2018. In accordance with the Federal Facility Agreement and Consent Order, Idaho must complete remediation activities at the Test Area North, Central Facilities Area, and the Power Burst Facility by FY 2006. The FY 2000 request supports 12 projects and allows significant milestone accomplishments to achieve maximum progress toward the 2006 goal. Activities include: storing 63,975 cubic meters of TRU waste; storing 3,385 and disposing offsite 4,329 cubic meters of LLW; the continuation of the deactivation activities, including the completion of one facility; and the completion of 37 release sites and facilities.

Oakland *(FY 1999 $51.9; FY 2000 $51.2)* manages activities at the Lawrence Livermore National Laboratory (LLNL) and beginning in FY 2000, the Separations Process Research Unit (SPRU) in New York. Oakland is committed to maintaining compliance with all regulatory requirements and agreements. Any urgent risks will be addressed in an expeditious manner. The request supports a total of eight projects. Activities at the LLNL include completing remediation activities at seven release sites, continuing the treatment, storage, and disposal activities associated with TRU, MLLW, LLW, and hazardous waste, and continuing construction of the Decontamination and Waste Treatment Facility (DWTF). At SPRU surveillance and maintenance activities are conducted.

At **Richland** *(FY 1999 $330.6; FY 2000 $376.3)* the Hanford site's mission is to safely store and stabilize inventories of spent nuclear fuel and special nuclear material, and to deactivate facilities associated with these materials. The *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) is the basis for EM's 2006 strategy. FY 2000 activities funded in seven projects support progress toward the 2006 vision and include: continued installation and testing of equipment/systems at K-Basins in support of the FY 2001 start of spent nuclear fuel removal; completion of installation and testing of the Plutonium Stabilization and Packaging System; and continued surveillance and maintenance and deactivation efforts.

Savannah River *(FY 1999 $481.9; FY 2000 $397.6)* has a mission to eliminate the legacy that resulted from the production of nuclear materials during the Cold War. To accomplish this mission, the cleanup program is composed of the following elements: spent nuclear fuel management; nuclear materials and spent nuclear fuel stabilization; waste management; deactivation; remediation; and landlord. The Site/Project Completion account funds all

nuclear materials and spent nuclear fuel stabilization activities, as well as construction line-item projects which will be completed by 2006. All other activities are funded in the Post 2006 Completion account. Ten projects are supported in FY 2000. Savannah River will: initiate decontamination of a major laboratory facility; initiate replacement of the F-Area tank farm service lines; complete construction of the H-Tank Farm Storm Water System Upgrades; continue efforts to develop an alternative technology for the treatment and packaging of aluminum-based research reactor spent nuclear fuel; and continue operations at the H- and F-Canyons in line with the phased canyon strategy. It should be noted that the construction of the Actinide Packaging and Storage Facility is deferred to allow for a reevaluation of storage requirements in light of the new plutonium missions assigned to the site.

Post 2006 Completion

The Post 2006 Completion request of $2,933.5 million supports projects that are projected to continue beyond 2006. This amount is a $219.0 million, an 8 percent, increase over the comparable amount in FY 1999. A total of 140 projects are funded at Albuquerque, Carlsbad Area Office, Idaho, Nevada, Oak Ridge, Richland, and Savannah River. In addition, a variety of multi-site activities are funded in this account. As cleanup is completed, it will be necessary for EM to maintain a presence at most sites to monitor, maintain, and provide information on the contained residual contamination. These activities will be necessary to ensure that the reduction in risk to human health is maintained.

Albuquerque *(FY 1999 $75.9; FY 2000 $105.8)* manages the activities for the Los Alamos National Laboratory (LANL) and has oversight of an Agreement in Principle (AIP) with the State of New Mexico. The cleanup of LANL is projected to be complete in FY 2015. Activities in six projects are supported with the FY 2000 request including: storage, treatment, and disposal of MLLW and TRU waste; remediation of 28 release sites and the decommissioning of two facilities; and the management of plutonium and beryllium sources.

Carlsbad *(FY 1999 $185.4; FY 2000 $186.4)* manages EM's Waste Isolation Pilot Plant (WIPP), which is comprised of four projects. The operation of WIPP is necessary for EM to dispose transuranic (TRU) waste generated by DOE. By 2006, the Department expects to dispose of approximately 42,000 cubic meters of contact-handled and remote-handled TRU waste. All TRU waste at Rocky Flats, the Nevada Test Site, Mound, and selected small quantity sites will have been disposed of at WIPP. Although there are legal considerations that have delayed the opening of WIPP, EM assumes that transuranic waste shipments and disposal will be initiated in FY 1999. By the end of FY 2000, the WIPP program expects to ramp up to 14 contact-handled TRU waste shipments per week. In order to reduce costs, the program is relying on privatization of contact-handled and remote-handled TRU waste transportation services. Stakeholder and outreach efforts funded by the WIPP program include New Mexico Impact Assistance, the Carlsbad Environmental Research and Monitoring Center, Western Governors' Association, Environmental Evaluation Group, cooperative agreements with Indian Tribes, and others.

At **Idaho** *(FY 1999 $317.0; FY 2000 $291.3)* the Idaho National Environmental and Engineering Laboratory (INEEL) is responsible for over 85,000 cubic meters of high-level (HLW), TRU, low-level (LLW), and mixed low-level (MLLW) waste. INEEL is also responsible for 570 cubic meters of spent nuclear fuel from a number of sources, including the Navy, foreign and domestic research reactors, and some commercial reactors. The 2006 strategy for Idaho will include long-term treatment, storage, and disposal operations and will include longer-term projects to complete the disposition of TRU, HLW, and spent nuclear

fuel. Due to the longevity of this program, continuous improvements in productivity and efficiency are planned. INEEL plans on the extensive use of innovative technologies to accelerate cleanup schedules and reduce costs. In order to achieve maximum progress toward the Post 2006 goal, FY 2000 activities within 20 projects include: continued remediation efforts, including Pit 9 and the completion of six release sites; continued decontamination and decommissioning activities, including the completion of 11 facilities; continued waste management activities; initiation of activities required to bring INEEL into compliance with the Resource Conservation and Recovery Act; stabilization of over 53 metric tons of heavy metal spent nuclear fuel; and continuation of the Foreign Research Reactor (FRR) Spent Nuclear Fuel Acceptance program. In addition to the funds provided here, $1.8 million has been requested within the Cost of Work for Others Program within the Departmental Administration appropriation to support the Foreign Research Reactor Spent Nuclear Fuel Program.

The **Nevada** (NV) *(FY 1999 $80.1; FY 2000 $85.3)* EM mission is to characterize and remediate inactive sites and facilities contaminated by historic DOE nuclear testing activities conducted at the Nevada Test Site (NTS), Tonopah Test Range (TTR), Nellis Air Force Range, and eight other locations in five states. At the NTS, radioactive and hazardous legacy wastes are treated, stored, and/or disposed. The 2006 strategy for areas outside the NTS boundaries is to characterize, remediate, and restore the surface areas for unrestricted use by the end of 2006. For areas within the boundaries of the NTS, the strategy is to complete site characterization and remediation of as many sites as available funding permits. In FY 2000, nine projects are supported. Nevada will conduct characterization and remediation activities at contaminated soil sites on TTR, Nellis, and the NTS. Other activities include modeling of underground test areas; characterization, segregation, and repackaging of TRU/Mixed TRU; treatment, storage, and/or disposal of waste; and continuation of Agreements-In-Principle and grants.

Oak Ridge (OR) *(FY 1999 $176.8; FY 2000 $264.6)* manages activities within the Oak Ridge Reservation (ORR) and several offsite properties contaminated by OR facility operations. The ORR is comprised of three facilities: the Y-12 Plant, the East Tennessee Technology Park (ETTP), and the Oak Ridge National Laboratory (ORNL). The 2006 strategy at OR will have all legacy TRU waste treated and disposal-ready by 2006; legacy mixed waste treated and disposed by 2008; legacy LLW disposed by 2019; and all remedial action sites completed by 2013. All spent nuclear fuel will be shipped to INEEL and Savannah River Site (SRS) for long-term storage. In FY 2000, activities within 17 projects are supported. Legacy waste will be progressing towards the goals identified above. Preparations are underway to repackage all ORR contact handled and remote handled TRU waste for disposal in the WIPP. Mixed low-level waste will be treated in the Toxic Substance Control Act (TSCA) incinerator and other waste will be treated and disposed. Beginning in FY 2000, remediation activities, including those at Bethel Valley and Melton Valley, are transferred from the Non-Defense EM appropriation to this account. (+$64.3)

While **Richland** *(FY 1999 $666.0; FY 2000 $687.4)* is committed to making significant progress by 2006, the majority of their activities will continue beyond 2006. In FY 2000, the EM program at Hanford supports 29 projects and includes: completion of 16 release sites and the decommissioning of 23 facilities; disposition of over 310,000 tons of soil in the Environmental Restoration Disposal Facility (ERDF); providing hazardous materials and emergency response training at the HAMMER facility; support of the Tank Waste Remediation System regulatory unit; interim stabilization of single shell high level waste

tanks, in accordance with the 1998 Consent Decree; implementation of the science and technology road map for the integration of vadose zone and groundwater activities; and support of characterization and infrastructure upgrades to meet the schedule negotiated with the privatization contractor for the high-level waste tank project.

Similarly, activities at **Savannah River** *(FY 1999 $733.0; FY 2000 $824.9)* will continue beyond 2006. Activities within 43 projects are supported by the FY 2000 request including: continued surveillance and maintenance activities; receipt of 65 casks of spent nuclear fuel from foreign research reactors and domestic sources; initiation of a design only construction line item for the Spent Nuclear Fuel Treatment and Storage Facility; stabilization of up to 100 canisters of HLW in the Defense Waste Processing Facility (DWPF); development of alternatives to the In-Tank Precipitation system; treatment of 795 cubic meters of MLLW; continued operation of the Consolidated Incinerator Facility to treat MLLW, LLW, and hazardous waste; remediation of six release sites; and, landlord activities. In addition to the funds provided here, $9.7 million has been requested within the Cost of Work for Others Program within the Departmental Administration appropriation to support the Foreign Research Reactor Spent Nuclear Fuel Program.

The **Multi-Site** activities *(FY 1999 $76.3; FY 2000 $68.0)* include a small number of essential crosscutting EM activities—including Headquarters technical supports efforts, Environmental and Regulatory Analysis, Hazardous Waste Operations and Emergency Response (HAZWOPER) training, Transportation and Packaging, Emergency Management, Analytical/Characterization Services, and Pollution Prevention—which focus national attention on areas that impact EM-wide goals and Department-wide planned efforts. The consolidation of these Multi-Site programs allows EM to better coordinate EM-wide and DOE-wide efforts, while leveraging program resources. This request supports activities within 11 projects.

In addition, the Multi-Site activities category also includes the federal contribution to the Uranium Enrichment Decontamination and Decommissioning Fund *(FY 1999 $398.1; FY 2000 $420.0 million)*.

Science and Technology

The FY 2000 Request includes $230.5 million for the Office of Science and Technology, a decrease of $12.7 million, or 5 percent, from the FY 1999 comparable amount. This Office is comprised of three major program areas—Technology Development and Deployment, Technology Acceptance and Support, and Science and Risk Policy—that provide new or improved cleanup technologies that reduce risks, reduce costs, and provide solutions to environmental problems that currently have no solutions. The Technology Development and Deployment program conducts applied research and development activities through Focus Areas to provide new technologies that will help improve cleanup capabilities or make cleanup possible. Also included are deployment support activities designed to facilitate site cleanup by providing a catalyst to stimulate widespread deployment of available alternative technologies. The FY 2000 budget continues activities begun in FY 1998 where competitively selected deployment projects are jointly supported by the Science and Technology program and the user programs to rapidly deploy technologies at DOE sites. The Technology Acceptance and Support program ensures that technologies which are still in development are ultimately accepted by all parties and used by DOE sites. This program also includes the Small Business Innovative Research (SBIR) assessment in accordance with Public Law 102-564.

Science and Risk Policy includes the EM Science program and the Risk Policy program. The EM Science Program, a collaborative effort between EM and the Office of Science, is a scientific research program focused on identifying long-term, basic science research needs, and targets the research on developing innovative and cost-effective cleanup methods. The Risk Policy program represents a partnership with the Center for Risk Excellence (in Chicago), which has the overall goal of developing and implementing policy, practices, guidance, and tools necessary to support credible risk-based environmental decisions within the EM program.

Program Direction

The FY 2000 Budget Request for Program Direction of $349.4 million is $12.3 million, or approximately 4 percent, greater than the comparable FY 1999 amount. Program Direction funding supports a total of 2,724 full time equivalents (FTEs) responsible for the overall direction and administrative support of the Environmental Management program and activities. Four-hundred and twenty-five FTEs (or 16 percent of EM workforce) are located at headquarters (employees based in the Washington, D.C. area), and 2,299 (or 84 percent) are stationed at the major Operations Offices located throughout the country. The funding provides for the salaries, benefits, travel, training, support services, and other related expenses associated with 2,724 FTEs. This request also includes $7.2 million for EM's share of the Working Capital Fund.

Environment, Safety and Health - Health Studies

The FY 2000 budget request for the Defense Environmental Restoration and Waste Management appropriation includes $20.0 million for Public Health Activities within the Office of Environment, Safety and Health. The FY 2000 request is $8.0 million, or 67 percent, greater than the FY 1999 comparable amount. These activities include health studies, health education and promotion, and other public and occupational health related initiatives at DOE sites. These activities support the consolidated health agendas at each site, which are coordinated under the Department's Memorandum of Agreement with the Department of Health and Human Services. This program is carefully integrated with the Health Studies program funded within the Other Defense Activities appropriation and also managed by the Office of Environment, Safety and Health.

Highlights of Program Changes ($ in millions)

Site/Project Completion *(FY 1999 $1,039.8; FY 2000 $980.9)* **-$58.9**

- Albuquerque *(FY 1999 $56.4; FY 2000 $46.8)* -$9.6
  - Overall decrease reflects less financial assistance for grants and cooperative agreements as programs are completed, completion of many remediation activities at Sandia, and completion of the Technical Area 21 Congressional report in FY 1999. Funding for Sandia is ramping down, since cleanup will be completed within three years.
  - This overall decrease is offset in part by increases in remediation efforts at Pantex, and the apparent increase in the Pinellas post-employment benefit payment, as the FY 1999 payment was supported by prior year funding.
- Idaho *(FY 1999 $108.6; FY 2000 $109.0)* +$0.4

- Net decrease reflects several programmatic shifts. Decreases occur due to the transfer of funding for the Environmental Engineering and Science Center to the Office of Science and Technology in FY 2000 (-$9.0), the near completion of the road rehabilitation project, and the one-year deferral of many LLW and MLLW waste activities.
- These decreases are offset by increases related to the significant ramp up of remediation efforts in Test Area North, the implementation of cleanup activities at the Power Burst Facility, the initiation of construction activities on the Health Physics Instrumentation Laboratory, and increase in transuranic waste packaging and shipping.

❖ Oakland *(FY 1999 $51.9; FY 2000 $51.2)* -$0.7

- Decrease reflects reduced construction costs for the Lawrence Livermore National Laboratory (LLNL) Decontamination and Waste Treatment Facility as the project nears planned completion in FY 2001, and a reduction in oversight grants.
- These decreases are offset by increases to support enhanced remedation efforts at Site 300, procurement of long lead equipment at LLNL, and the initial year of funding for surveillance and maintenance of SPRU.

❖ Richland *(FY 1999 $330.6; FY 2000 $376.3)* +$45.7

- Increase reflects Plutonium Stabilization and Packaging System acquisition, testing and training, acceleration of plutonium solutions stabilization, and systems installation and testing in K-Basins.
- These increases are offset slightly by the deferral of Building 324 B-Cell cleanout, as well as reductions resulting from the completion of the B-Plant shutdown in FY 1999.

❖ Savannah River *(FY 1999 $481.9; FY 2000 $397.6)* -$84.3

- Decrease reflects reduced construction requirements due to the completion of some efforts in FY 1999 and the deferral of the Actinide Packaging and Storage Facility. In addition, funding for the K-Reactor Spent Nuclear Fuels project and the Heavy Water project are transferred to the Post 2006 decision unit in FY 2000 (-$38.4).
- These decreases are offset in part by the initiation of a new decontamination project and increased activities in the F Canyon to continue Multi-Purpose Processing Facility Stabilization and americium/curium vitrification.

❖ Year 2000 Transition Activities *(FY 1999 $10.3; FY 2000 $0.0)* -$10.3

- Decrease reflects the completion of the Year 2000 transition activities in FY 1999.

Post 2006 Completion *(FY 1999 $2,714.5; FY 2000 $2,933.5)* **+$219.0**

❖ Albuquerque *(FY 1998 $75.9; FY 2000 $105.8)* +$29.8

- Increase reflects increased characterization and remediation efforts to meet land transfer requirements, increased transuranic waste retrieval and packaging activities, the accelerated recovery of plutonium and beryllium sources, and the establishment of the National Isotope and Sealed Source Management Office.

❖ Carlsbad *(FY 1999 $185.4; FY 2000 $186.4)* +$1.0

- Reflects increase in contact-handled transuranic waste receiving capabilities, offset by the return to the original longer schedule for experimental efforts supporting recertification.

❖ Idaho *(FY 1999 $317.0; FY 2000 $291.3)* -$25.8

- Net decrease reflects several programmatic shifts. The decrease is driven in part by the fact that the alternative remediation of Pit 9 will be supported by prior year funding, and Phase I support activities for the Advanced Mixed Waste Treatment Facility were largely completed in FY 1999. Also, several construction activities were completed in FY 1999; efforts related to the national spent nuclear fuel program are ramping down from their peak level in FY 1999; and a reduced number of spent nuclear fuel transfers and receipts are planned in FY 2000.
- These decreases are offset in part by increases related to the initiation of activities to attain compliance with the Resource Conservation and Recovery Act, the ramp up of high level waste technology demonstration and conceptual design, and increased site monitoring activities.

❖ Nevada *(FY 1999 $80.1; FY 2000 $85.3)* +$5.2

- Increase supports ramp up of remediation efforts at industrial sites and offsite, and the slight increase in transuranic waste shipment preparation.

❖ Oak Ridge *(FY 1999 $176.7; FY 2000 $264.6)* +$87.8

- Increase is driven largely by the transfer of remediation activities, including those at Bethel Valley and Melton Valley, from the Non-Defense Environmental Management appropriation beginning in FY 2000 (+$64.3). Increase also supports: full operation of the broad spectrum treatment of mixed low level waste; work-off of legacy waste; increased remediation at East Fork Poplar Creek and offsite; additional deactivation efforts at the Centrifuge Facility; increased support for Agreements-In-Principle and the National Center of Excellence for Metal Recycling; and resolution of the spent nuclear fuel vulnerability.
- These increases are offset in part by decreases related to completion of the transuranic sludge transfer project in FY 1999.

❖ Richland *(FY 1999 $666.0; FY 2000 $687.4)* +$21.4

- Net increase is the result of several programmatic shifts. Increases are driven by: additional restoration activities due to increase waste excavation in the 100 Area; stabilization of single shell HLW tanks; ramp up of groundwater/vadose zone integration activities; upgrades to cesium

and strontium capsule storage and leak detection; integration of the safety authorization basis for the management of HLW, and increased TRU waste treatment and packaging in preparation of shipment to WIPP.

- These increases are offset by decreases associated with the completion of a major Environmental Restoration Disposal Facility expansion and closure of older disposal cells in FY 1999; postponement of some remediation activities; deferral of some tank waste characterization activities; and a delay in the schedule for the Tank Waste Retrieval System to reflect the new privatization schedule.

❖ Savannah River *(FY 1999 $733.0; FY 2000 $824.9)* +$91.8

- Overall increase results from several programmatic shifts. Increases are associated with: the transfer of the K-Reactor Spent Nuclear Fuel project and the Heavy Water project from the Site/Project Completion account in FY 2000 to the Post 2006 Completion Account ($38.4); increased remediation efforts site-wide; the design and construction of a pilot facility for the replacement of the In-Tank Precipitation system; and initiation of design of the Spent Nuclear Fuel Treatment and Storage facility.

- These increases are offset in part by the reduction in Defense Waste Processing Facility (DWPF) operation to produce 100 canisters of vitrified high level waste (200 canisters in FY 1999); elimination of funding for several grants; reduced basin operations; and reduced LLW and MLLW disposition.

❖ Multi-Site *(FY 1999 $76.3; FY 2000 $68.0)* -$8.3

- Decrease reflects reduction in Policy and Management activities and efficiencies expected in the Pollution Prevention program.

❖ D&D Fund deposit *(FY 1999 $398.1; FY 2000 $420.0)* +$21.9

- Increase reflects increase due to inflation.

Science & Technology *(FY 1998 $243.2; FY 2000 $230.5)* **-$12.7**

❖ Technology Development and Deployment *(FY 1999 $187.2; FY 2000 $193.5)* +$6.3

- Increase in mixed waste, characterization, and disposal focus area reflects greater effort to address technology needs related to shipments of transuranic waste to WIPP. (+$3.4)

- Increase in radioactive tank waste remediation focus area reflects focus on pretreatment, immobilization and volume reduction technology to enable high level-waste tank closures. (+$7.2)

- Increase in subsurface contaminants focus area reflects increased efforts to address critical technology needs related to Dense Non-Aqueous Phase Liquid characterization and delineation in vadose zones and contaminants in deep, complex geologic settings. (+$3.4)

- Overall decrease in decontamination and decommissioning focus area reflects completion of activities related to transuranic contaminated materials and waste disposition in FY 1999. (-$5.8)
- Decrease in plutonium stabilization and disposition focus area reflects the completion of surveillance and monitoring technology development activities in FY 1999. (-$1.2)
- Decrease in university programs reflects discontinuation of electronics recovery recycle and mixed waste/subsurface contaminants activities in FY 2000. (-$4.3)
- Increase in Idaho Technology Validation and Verification Program reflects the consolidation of this program within the Office of Science and Technology in FY 2000. (+$9.0)
- Decrease is consistent with agreed upon program activities at Western Environmental Technology Office as specified in the five-year contract between DOE's Federal Energy Technology Center and MSE Technology Applications, Inc. (-$2.5)
- Decrease in Technology Acceptance and Support reflects reductions in Interstate Technology Regulatory Cooperation workgroup and in deployment support. (-$2.6)
- Decrease in Small Business Innovative Research (SBIR) Program reflects reduction in the overall research and development efforts, on which the SBIR assessment is based. (-$0.3)

❖ EM Science *(FY 1999 $47.0; FY 2000 $32.0)* -$15.0

- Decrease results from reduced new science research and development grant awards in FY 2000.

❖ Risk Policy *(FY 1999 $9.0; FY 2000 $5.0)* -$4.0

- Decrease results from decreased need for grant-funded activities.

Program Direction *(FY 1999 $337.1; FY 2000 $349.4)* **+$12.3**

❖ Overall increase in salaries and benefits funding ($243.0) is the result of a $10.1 million increase to support 4.1 percent escalation for personnel related expenses, offset by reductions associated with the decrease of 40 FTEs within the Environmental Management complex. *(FY 1999 2,764 FTEs; FY 2000 2,724 FTEs)* +$6.7

❖ Travel funding ($9.8) has been reduced by $0.5 million or 4 percent from the FY 1999 comparable amount. -$0.5

❖ Support services funding ($55.8) has been reduced by $3.5 million or 6 percent from the FY 1999 comparable amount. -$3.5

❖ Funding for other related expenses ($40.8) has increased by $0.6 million or 1 percent over the FY 1999 comparable amount. This increase supports $1.8 million

in utility upgrades and federal employee training at several field sites, offset by a decrease of $1.3 million in administrative expenses throughout the complex. +$0.6

- Increase of $9.1 million is result of prior year funding used to support FY 1999 activities. +$9.1

Environment, Safety and Health - Health Studies *(FY 1999 $12.0; FY 2000 $20.0*) +$8.0

- Increase reflects the expanded Public Health Activities program resulting from the development of site-specific prioritized health agendas.

Defense Environmental Management Privatization

Program Overview

The objective of the Defense Environmental Management Privatization program is to obtain the best price for the desired products and services by using open competition to award fixed price contracts. The selected contractor(s) is (are) responsible for and owns development of the technologies, equipment, and facilities necessary to deliver the end product or service to EM and typically does not receive payment until specified goals are met and services are delivered.

The goals of the EM Privatization program are to: remove DOE from activities that are not inherently governmental functions or core business line responsibilities; reduce the cost of doing business; expedite Environmental Management clean-up activities; and improve the quality and delivery of service by obtaining best-of-class resources within the private sector.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Defense Environmental Management Privatization					
Privatization initiatives, various locations	200,000	228,357	253,000	24,643	10.8%
Use of prior year balances & other adjustments	0	0	-25,000	-25,000	N/A
Total, Defense Environmental Management Privatization	200,000	228,357	228,000	-357	-0.2%

Budget Overview

The FY 2000 budget request of $228.0 million for the Defense Environmental Management Privatization appropriation is approximately 4 percent of the total FY 2000 budget request of $5,928.0 million for Environmental Management. Funding provides for the continuation of five projects at Hanford, Idaho, and Oak Ridge. The Department has also requested advanced appropriations through FY 2004 to support the Tank Waste Remediation System privatization in Richland (and the Advanced Mixed Waste Treatment Project in Idaho in FY 2001).

FY 2000 Budget Request

The FY 2000 request for Privatization is $228.0 million, essentially equivalent to the FY 1999 amount. However, the FY 2000 request supports a total of $253.0 million in contract activity. This amount is offset by the use of $25.0 million in prior year funding from a now canceled privatization project. The Spent Nuclear Fuel Transfer and Storage Facility at Savannah River is being completed as a traditional line item project in the Defense Environmental Restoration and Waste Management Appropriation. Total funding to date (FY 1996 - FY 2000) for the Privatization program is $986.4 million. FY 2000 budget authority is requested for the following projects:

Advanced Mixed Waste Treatment Project, Idaho $110.0

Spent Nuclear Fuel Dry Storage, Idaho $5.0

Environmental Management/Waste Management Disposal, Oak Ridge $20.0

Transuranic Waste Treatment, Oak Ridge $12.0

Tank Waste Remediation System, Phase I, Richland $106.0

This authority is set aside to cover contractual obligations, as well as to provide an incentive for private sector investment. In the unlikely event that the government terminates the contract for convenience, these funds would be used to liquidate the termination liability of the government.

Highlights of Program Changes ($ in millions)

Defense Environmental Management Privatization *(FY 1999 $228.4; FY 2000 $228.0)* **-$0.4**

- Advanced Mixed Waste Treatment Project, Idaho *(FY 1999 $87.3; FY 2000 $110.0)* — This project began in December 1996, for the treatment and supporting services for 65,000 cubic meters of alpha and TRU mixed waste located in retrievable storage at the INEEL Radioactive Waste Management Complex (RWMC). FY 2000 funding provides for approximately 40 percent of the full funding needed for the physical construction phase of this project based on the fixed price contract that was awarded. Total funding to date, including the FY 2000 request, is $267.3 million. +$22.7

- Spent Nuclear Fuel Dry Storage, Idaho *(FY 1999 $20.0; FY 2000 $5.0)* — This project was initiated in FY 1998 and involves the procurement of a dry storage facility capable of transferring and cleaning spent fuel rods. Contract award is scheduled for late FY 1999. Total funding to date for this project, including the FY 2000 request, is $52.0 million. The total cost of this project is currently estimated to be $120.0 million. -$15.0

- Environmental Management/Waste Management Disposal, Oak Ridge *(FY 1999 $33.5; FY 2000 $20.0)* — This project was initiated in FY 1998 for the purchase of waste disposal services from a private vendor for low-level, hazardous, TSCA defined, and mixed wastes generated at Oak Ridge. Total funding to date is $58.5 million, which is the total estimated cost of the project. -$13.5

- Transuranic Waste Treatment, Oak Ridge *(FY 1999 $0; FY 2000 $12.0)* — This project was initiated in FY 1997 and the contract was awarded in FY 1998. The vendor will construct, permit and operate a treatment facility to treat, on a fixed unit price basis, the transuranic sludge and solids currently stored in the Melton Valley Storage Tanks. Total funding to date is $77.0, which is the total estimated cost of the project. +$12.0

- Tank Waste Remediation Systems, Phase I, Richland *(FY 1999 $100.0; FY 2000 $106.0)* — The current privatization effort is a 24-month extended design contract that will result in sufficient engineering and process experience to establish fixed-unit prices and to finalize project financing terms. At the conclusion of the design contract, DOE will decide whether to proceed with the design completion, construction, and operations. During operations, the contractor would provide both high-level and low-activity waste treatment and immobilization services. That

activity would extend over a ten-year period with a guaranteed minimum-order-quantity and is projected to process approximately 10% of the Hanford tank waste. Total funding to date is $491.0 million. +$6.0

- One project was fully funded in FY 1999 and does not require any additional funding in FY 2000. -$19.6
- FY 1999 privatization activities were supported by the use of $32.0 million in prior year funding. The FY 2000 request is supported by $25.0 million of prior year funds. +$7.0

Non-Defense Environmental Management

Program Overview

EM is responsible for managing and addressing the environmental legacy resulting from nuclear energy and research activities. The EM program has established a goal of cleaning up as many of its contaminated sites as possible by 2006. The FY 2000 budget request reflects the program's increased emphasis on site closure and project completion.

Budget Overview

The Non-Defense Environmental Management FY 2000 budget request of $330.9 million is a $100.3 million, 23 percent, decrease from the FY 1999 comparable amount. Of the request, approximately 64 percent is for Site Closure, 30 percent is for Site/Project Completion, and 6 percent is for Post 2006 Completion.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Non-defense Environmental Management					
Site closure	270,241	248,485	211,146	-37,339	-15.0%
Site/project completion	111,705	101,325	100,866	-459	-0.5%
Post 2006 completion	81,508	87,524	18,922	-68,602	-78.4%
Subtotal, Non-defense Environmental Management	463,454	437,334	330,934	-106,400	-24.3%
Use of prior year balances & other adjustments	——	-6,134	——	6,134	100.0%
Total, Non-defense Environmental Management	463,454	431,200	330,934	-100,266	-23.3%

FY 2000 Budget Request

Site Closure

Of the $330.9 million requested for Non-Defense Environmental Management in FY 2000, $211.1 million is for **Site Closure** activities. The requested amount is $37.3 million, or 15 percent below the FY 1999 comparable amount. The goal of this program is to clean up and close the sites within this account by FY 2006. After clean-up, there will be no further Departmental presence, with the exception of long-term surveillance and maintenance. The sites in this account currently are under the management of the Albuquerque, Ohio, and Oak Ridge Operations Offices.

Albuquerque *(FY 1999 $68.1; FY 2000 $43.5)* will manage activities at two sites, the Grand Junction Office in Colorado and the Monticello millsite in Utah, as well as the Uranium Mill Tailings Remedial Action (UMTRA) Groundwater Project. The cleanup of both the Grand Junction Office and Monticello mill site will be completed by 2006. Major FY 2000 activities

which support these goals include the continued remediation of release sites and facility decommissioning at the Grand Junction Office, completion of the cleanup of the Monticello mill site, and the implementation of active ground water compliance activities at the Ship Rock, New Mexico site within the UMTRA Groundwater Project.

Ohio *(FY 1999 $116.9; FY 2000 $115.6)* supports activities at the Columbus Environmental Management Project (CEMP), the Miamisburg Environmental Management Project (MEMP) in Ohio, and the West Valley Demonstration Project (WVDP) in New York. Specifically, EM plans to complete the restoration of all three sites by FY 2006, with MEMP transferred to the City of Miamisburg, CEMP returned to Battelle Laboratories for unrestricted use, and WVDP completion of production of high-level waste glass by the end of 2006. FY 2000 planned activities which support these goals include: the continued restoration and decontamination activities at the West Jefferson Site within CEMP; the decontamination of the Semi-Works Cave at MEMP; and at WVDP, vitrification of high-level waste heels (5 canisters) and the preparation to transfer spent nuclear fuel to the Idaho National Environmental and Engineering Laboratory.

Oak Ridge *(FY 1999 $63.5; FY 2000 $52.0)* manages the **Weldon Spring Site Remedial Action Project** in Missouri, which is a decommissioned uranium processing plant. EM's goal is to complete all environmental restoration activities at Weldon Spring by 2002. During FY 2000, remedial activities will continue on pace to meet this goal. It is the intent of the Environmental Management program to fund the Weldon Spring Remedial Action Project at a level of $63.5 million. The program will work to identify funding sources for this important activity.

Site/Project Completion

The request of $100.9 million for the **Site/Project Completion** account continues ongoing efforts to complete by 2006, projects at national laboratories or other facilities where DOE will continue to have a presence. This amount is $0.5 million, or 1 percent, below the FY 1999 comparable amount. The sites in this account are currently under the management of the Albuquerque, Chicago, Idaho, Oakland, and Richland Operations Offices.

Albuquerque *(FY 1999 $0.5; FY 2000 $0.5)* supports continued waste management activities for the cleanup of the Lovelace Biomedical and Environmental Research Institute (formerly Inhalation Toxicology Research Institute) in New Mexico by 2006.

Chicago *(FY 1999 $54.1; FY 2000 $54.1)* manages cleanup efforts at six sites: Ames Lab in Iowa; the Argonne National Lab-East (ANL-E); Site A in Illinois; Argonne National Lab-West (ANL-W) in Idaho; Princeton Plasma Physics Lab in New Jersey; and Brookhaven National Lab (BNL) in New York. EM's goal is to complete all environmental restoration activities at all of these sites by 2006, and to transfer management of all newly-generated waste operations back to the generator. Major activities planned in FY 2000 include: surveillance and maintenance activities and continued remediation payments at PPPL; remediation and groundwater activities at BNL (the DOE Office of Science also provides funding for BNL clean up activities); facility decommissioning and remediation at ANL-E; continued landlord and program support; and compliant waste treatment, storage, and disposal activities at all sites (except ANL-W, which transferred to the generator in FY 1998).

Idaho *(FY 1999 $10.0; FY 2000 $9.2)* supports the cleanup of three reactor facilities and the construction of a dry storage facility for Three-Mile Island spent nuclear fuel located at the Idaho National Engineering and Environmental Lab (INEEL), as well as the management of

the National Low-Level Waste Program. Major activities planned in FY 2000 include: the continued construction of the dry storage facility; the completion of deactivation of the Materials Test Reactor Canal and the initiation of fuel removal and deactivation of the Power Burst Facility; and continued surveillance and maintenance of the Advanced and Fast Coupled Reactivity Measurement Facility (already deactivated).

Oakland *(FY 1999 $35.0; FY 2000 $35.7)* supports activities at six sites within California: Lawrence Berkeley National Lab (LBNL), Energy Technology Engineering Center (ETEC), General Electric Vallecitos Nuclear Center (GE), General Atomics facility (GA), Laboratory for Energy-Related Health Research (LEHR), and the Stanford Linear Accelerator Center (SLAC). In addition to managing the restoration and waste management programs at these facilities, Oakland administers grants for the State of California's oversight activities. In FY 2000, Oakland will complete one assessment, decommission two facilities, complete nine cleanups, and continue treatment, storage, and disposal activities associated with transuranic, mixed low-level, low-level, and hazardous waste at LEHR, ETEC, and LBNL.

Richland *(FY 1999 $1.9; FY 2000 $1.4)* manages the stabilization and deactivation of Building 309, the Plutonium Recycle Test Reactor, and Nuclear Energy legacies.

Post 2006 Completion

The FY 2000 request for **Post 2006 Completion** is $18.9 million. This amount is $68.6 million, 78 percent, below the FY 1999 comparable amount. The majority of this reduction reflects the transfer of activities to the Defense Environmental Restoration and Waste Management appropriation. The request supports EM cleanup projects that are expected to continue well beyond 2006. The sites in this account are managed by the Albuquerque and Oak Ridge Operations Offices. This account also includes multi-site and headquarters activities.

Albuquerque *(FY 1999 $1.6; FY 2000 $6.0)* manages the Radioactive Source Recovery Program through the Los Alamos National Laboratory. FY 2000 marks the first year of full operations to accept and dispose of the sealed radioactive sources consistent with Public Law 99-240.

Oak Ridge *(FY 1999 $71.1; FY 2000 $3.8)* manages the facility deactivation at the Oak Ridge Reservation (ORR). In FY 2000, the majority of remediation efforts, including those at Bethel Valley and Melton Valley, are funded within the Defense Environmental Restoration and Waste Management appropriation. EM's goal for sites within this account is to meet acceptance criteria for the transfer of deactivated surplus facilities by 2003. FY 2000 activities include continued surveillance and maintenance of deactivated facilities, engineering studies supporting facility decommissioning efforts, and site-wide contract management support related to the transition of managing and integrating the contract.

Multi-Site activities *(FY 1999 $9.3; FY 2000 $9.1)* include a small number of essential crosscutting EM activities: program support functions at Headquarters; the Packaging Certification and Transportation Safety program; and the non-defense Pollution Prevention program. The consolidation of these Multi-Site activities allows EM to better coordinate EM-wide and DOE-wide program efforts.

Highlights of Program Changes ($ in millions)

Site Closure *(FY 1999 $248.5; FY 2000 $211.1)* **-$37.3**

- Albuquerque *(FY 1999 $68.1; FY 2000 $43.5)* -$24.6
  - Decrease reflects the closeout of the UMTRA Surface Project in FY 1999 and the nearing completion of the Monticello cleanup effort.
  - These decreases are offset in part by the increases in the UMTRA Groundwater Project to initiate cleanup of the Ship Rock, New Mexico site, and a slight ramp up of activities at the Grand Junction Project Office.
- Ohio *(FY 1999 $116.9; FY 2000 $115.6)* -$1.2
  - Net decrease is the result of several programmatic shifts. Decrease reflects: at the Columbus Environmental Management Project, reduced efforts at the West Jefferson Site; at West Valley Demonstration Project, the discontinuation of technology efforts related to residual waste removal from high level waste tanks and the deferral of some construction activities.
  - These decreases are partially offset by an increase in spent nuclear fuel activities to prepare for the transfer of fuel to the Idaho National Environmental and Engineering Laboratory beginning in FY 2001.
- Oak Ridge *(FY 1999 $63.5; FY 2000 $52.0)* -$11.5
  - Decrease reflects the completion of waste treatment activities at the Weldon Spring Site.

Site/Project Completion *(FY 1999 $101.3; FY 2000 $100.9)* **-$0.5**

- Idaho *(FY 1999 $10.0; FY 2000 $9.2)* -$0.8
  - Net decrease reflects the completion of the deactivation of the Material Test Reactor Canal, offset by the initiation of deactivation efforts at the Power Burst Facility in FY 2000.
  - This decrease is offset by an increase in the construction cost of the TMI-2 Spent Nuclear Fuel Dry Storage Project to address project delays and additional requirements.
- Oakland *(FY 1999 $34.9; FY 2000 $35.7)* +$0.8
  - Net increase supports completion of the decontamination and decommissioning of the foundations of the Sodium Component Test Loop and the Liquid Materials Development Laboratories at ETEC, and increased waste management activities at LBNL and ETEC.
  - These increases are partially offset by reduction in ETEC landlord activities due to reduced surveillance and maintenance requirements as facilities are deactivated, and reduced volumes of waste are generated at LEHR.
- Richland *(FY 1999 $1.9; FY 2000 $1.4)* -$0.5
  - Decrease reflects the deferral of further facility deactivation activities.

Post 2006 Completion *(FY 1999 $81.9; FY 2000 $18.9)* **-$63.1**

- Albuquerque *(FY 1999 $1.6; FY 2000 $6.0)* +$4.4
  - Increase supports first year of full operations to accept and dispose of radioactive sealed sources consistent with the requirements of Public Law 99-240.
- Oak Ridge *(FY 1999 $71.1; FY 2000 $3.8)* -$67.3
  - Decrease reflects the transfer of remediation activities at Bethel Valley and Melton Valley to the Defense Environmental Restoration and Waste Management account (-$64.3), the transfer of off-site remediation efforts to the Uranium Enrichment Decontamination and Decommissioning Fund, and the deferral of all deactivation work to avail funding to higher priority activities.
- Multi-Site *(FY 1999 $9.3; FY 2000 $9.1).* -$0.2
  - Decrease reflects reduced efforts in the Packaging Certification and Transportation Safety Program and in support for environmental restoration crosscutting activities.

Uranium Enrichment Decontamination & Decommissioning Fund

Program Overview

The Energy Policy Act of 1992 established the Uranium Enrichment D&D Fund to carry out environmental management responsibilities at the nation's three gaseous diffusion plants located at Portsmouth, Ohio; Paducah, Kentucky; and the East Tennessee Technology Park (ETTP) (formerly K-25) in Oak Ridge, Tennessee. These responsibilities include decontamination and decommissioning, remedial actions, waste management, ETTP landlord requirements and surveillance and maintenance activities associated with pre-existing conditions at the plants. The Energy Policy Act also authorizes annual deposits into the Uranium Enrichment D&D Fund of up to $480.0 million adjusted for inflation. Domestic utilities are to be assessed up to $150.0 million per year (adjusted for inflation) for 15 years based on their purchase of uranium enrichment services from the federal government. The remainder of the annual deposit is authorized to come from annual appropriations.

The Energy Policy Act also requires DOE to develop and administer a reimbursement program for active uranium and thorium processing sites which sold processed ore to the United States Government. This program assists site owners by compensating them on a per-ton basis for the restoration costs of tailings resulting from the sale of materials to the federal government.

Budget Overview

The FY 2000 budget request of $240.2 million from the Uranium Enrichment D&D Fund is approximately 4 percent of the total FY 2000 Budget Request of $5,928.0 million for the Environmental Management program.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Uranium Enrichment Decontamination and Decommissioning Fund					
Decontamination and decommissioning	190,200	190,200	210,198	19,998	10.5%
Uranium/thorium reimbursements	40,000	30,000	30,000	0	0.0%
Total, Uranium Enrichment Decontamination and Decommissioning Fund	230,200	220,200	240,198	19,998	9.1%

The total Environmental Management FY 2000 budget request will be offset by a federal government contribution of $420.0 million into the Uranium Enrichment D&D Fund from the amount appropriated to the Department within the Defense Environmental Restoration and Waste Management appropriation account. In addition, an estimated $184.0 million from assessments to domestic utilities will be deposited into the Fund. Of the $240.2 million requested for appropriation from the Uranium Enrichment D&D Fund in FY 2000, $210.2 million will be used to fund current work scope at the gaseous diffusion plants. The remainder of the request, $30.0 million provides for the partial payment of approved uranium and thorium reimbursement claims. The balance of the deposits within the Fund will remain in the Fund for future cleanup at the gaseous diffusion plants.

FY 2000 Budget Request

The FY 2000 budget request reflects a $20.0 million or 9 percent increase over the FY 1999 comparable amount.

Highlights of Program Changes ($ in millions)

Oak Ridge *(FY 1999 $190.2; FY 2000 $210.2)* **+$19.8**

- Net increase is the result of several programmatic shifts. Increases are associated with: the first year of full scale efforts (3 shifts per day) to decontaminate and decommission three processing buildings at ETTP; increased costs associated with the disposal of pond sludge at Envirocare of Utah; and the transition from assessments to actual cleanup at the Paducah plant.
- These increases are offset in part by reductions in infrastructure costs at the East Tennessee Technology Park as the result of re-industrialization and efficiencies, and one-year deferral of mixed low level waste treatment at Portsmouth.

Defense Nuclear Waste Disposal

Mission

The Defense Waste Disposal Fund supports the activities necessary to dispose of high-level waste generated from atomic energy defense activities. Appropriations from this fund support the Office of Civilian Radioactive Waste Management's Yucca Mountain Site Characterization Project and the Waste Acceptance, Storage and Transportation Project which are described in greater detail in the Nuclear Waste Disposal section of the Budget Highlights. The FY 2000 budget request is $112.0 million. However, a total of $73.0 million is shown in the Defense Nuclear Waste Disposal appropriation, which reflects the release and transfer to the Nuclear Waste Disposal appropriation of $39.0 million of the $85.0 million reserved in the FY 1996 Defense Nuclear Waste appropriation.

Power Marketing Administrations

Mission

The Power Marketing Administrations (PMAs) market electricity generated primarily by hydropower projects. Preference for the sale of power is given to public bodies and cooperatives. Revenues from selling power and transmission services of the four PMAs are used to repay the U.S. Treasury annual operation and maintenance costs, repay the capital investments with interest, and assist capital repayment of other features of certain projects.

Program Overview

Alaska Power Administration

The Alaska Power Administration (APA) was created in 1967 by the Secretary of the Interior to assume the functions of the Bureau of Reclamation in Alaska - the operations, maintenance, transmission, and power marketing of the hydroelectric projects (Eklutna and Snettisham), and the investigation of future water and power development programs, in Alaska. In 1977, APA was transferred to DOE.

The Alaska Power Administration Asset Sale and Termination Act (Public Law 104-58), signed into law on November 28, 1995, authorizes and directs the sale of all Alaska Power Administration assets and the subsequent termination of APA. The Eklutna Project was sold on October 2, 1997, for a cash payment of $6.0 million. The Snettisham Project was sold on August 18, 1998, for $82.0 million. Under the terms of the APA Asset Sale and Termination Act, APA has until August 18, 1999, to complete the legislatively-mandated Report to Congress documenting the asset sales and terminate the Power Administration.

Consistent with this mandate, all remaining Alaska activities of APA, including the Juneau headquarters office, were terminated on September 30, 1998. Unobligated Transition and Termination balances will be used to complete remaining close-out activities and report preparation in Washington, DC.

Southeastern Power Administration

The Southeastern Power Administration sells wholesale power generated at 23 hydroelectric generating plants in eleven southeastern states primarily to publicly and cooperatively owned electric distribution utilities. Since Southeastern does not own or operate any transmission facilities, power is delivered by utilizing the transmission systems of the electric utilities in the area. Historically, this was accomplished through wheeling agreements between Southeastern and the region's large private utilities with transmission lines connected to the projects, to provide firm power to Southeastern's customers. However, beginning in FY 2000, the Southeastern Power Administration will no longer seek appropriations for purchase power and wheeling activities. Instead, the customers of Southeastern Power Administration will make their own power purchase and transmission arrangements directly with suppliers. Power receipts estimates have been reduced to reflect the reduced spending by the Southeastern Power Administration.

Southwestern Power Administration

The Southwestern Power Administration operates within a six-state area as a marketing agent for hydroelectric power produced at 24 U.S. Army Corps of Engineers multipurpose projects and sells power at wholesale rates primarily to publicly and cooperatively owned electric distribution utilities. To integrate the operation of the hydroelectric generating plants and to transmit power from the dams to its customers, Southwestern maintains 2,225 kilometers (1,380 miles) of high-voltage transmission lines, 24 substations, and 46 microwave and VHF radio sites. Beginning in FY 2000, the Southwestern Power Administration will no longer seek appropriations for purchase power and wheeling activities. Instead, the customers of Southwestern Power Administration make their own power purchase and transmission arrangements directly with suppliers. Power receipts estimates have been reduced to reflect the reduced spending by the Southwestern Power Administration.

Western Area Power Administration

The Western Area Power Administration markets and provides transmission of federal and non-federal electric power in 15 central and western states encompassing about 40 percent of the total area of the contiguous United States from 55 federally owned hydropower plants operated primarily by the Bureau of Reclamation, U.S. Army Corps of Engineers, and the International Boundary and Water Commission. Western also markets the United States' entitlement from the Navajo coal-fired power plant near Page, Arizona. These activities are accomplished through a combination of appropriated funds and direct use of revenues. Western maintains an existing infrastructure of 16,857 circuit miles of transmission line and 258 substations. To firm up federal hydropower supplies needed to meet Western's contractual obligations, Western has historically purchased power from others and has purchased transmission services when a third party's transmission lines were needed to deliver federal power. Beginning in FY 2000, the Western Area Power Administration will no longer seek appropriations for purchase power and wheeling activities. Instead, the customers of Western Area Power Administration will make their own power purchase and transmission arrangements directly with suppliers. Power receipts estimates have been reduced to reflect the reduced spending by the Western Area Power Administration.

Bonneville Power Administration

The Bonneville Power Administration provides electric power, transmission and energy services to a 300,000 square mile service area in the Pacific Northwest. Bonneville sells at wholesale the power produced at a total of 29 federal projects, operated by the U.S. Army Corps of Engineers and Bureau of Reclamation and from certain non-federal hydro and thermal generating facilities. Bonneville provides about 40 percent of the Pacific Northwest region's electric power transmission capacity utilizing over 23,800 circuit kilometers (about 14,800 circuit miles) of transmission lines and about 360 substations. Operating on a self financed revolving fund basis, Bonneville does not require appropriations to finance its day to day operations. It does, however, utilize borrowing authority for its capital investment activities. Bonneville funds the expense portion of its budget and repays the federal investment with revenues from electric rates.

Budget Overview

Overall, the budget requests for the Power Marketing Administrations, excluding Bonneville and Colorado River Basins, decreases by $37.6 million in FY 2000. This decrease is comprised of a reduction of $51.8 million in the program level for the Western Area Power

Administration; an increase of $1.9 million for the Southwestern Power Administration; a decrease of $5.7 million in the program level for the Southeastern Power Administration, offset by an $18.1 million decrease in prior year balances available to offset FY 1999 requirements, resulting in a net decrease of $37.6 million. Bonneville Power Administration proposes to obligate $352.0 million of its borrowing authority in FY 2000, and will have net outlays of -$23.0 million.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Power Marketing Administrations:					
Alaska Power Administration	13,500	——	——	——	——
Southeastern Power Administration	15,612	10,500	4,727	-5,773	-55.0%
Southwestern Power Administration	27,110	26,000	27,940	1,940	7.5%
Western Area Power Administration					
Western Area Power Administration	230,124	223,576	171,471	-52,105	-23.3%
Transfer of current authority from DOI	2,674	——	——	——	——
Total, Western Area Power Administration	232,798	223,576	171,471	-52,105	-23.3%
Falcon & Amistad Operating & Maintenance Fund	970	1,010	1,309	299	29.6%
Subtotal, Power Marketing Administrations:	289,990	261,086	205,447	-55,639	-21.3%
Use of prior year balances	-46,371	-23,576	-5,500	18,076	76.7%
Total, Power Marketing Administrations	243,619	237,510	199,947	-37,563	-15.8%
Colorado River Basin Power Marketing Fund					
Spending authority from offsetting collections	124,786	100,661	113,591	12,930	12.8%
Offsetting collections	-140,884	-116,759	-134,591	-17,832	15.3%
Total, Colorado River Basin	-16,098	-16,098	-21,000	-4,902	-30.5%
Bonneville Power Administration (non-add)					
Budget authority	(-17,000)	(-87,000)	(8,000)	(95,000)	(+109.2%)
Capital obligations	(232,000)	(258,000)	(352,000)	(94,000)	(36.4%)
Full time equivalent employment (FTEs)					
Alaska Power Administration	*6*	*1*	*0*	*-1*	*-100.0%*
Bonneville Power Administration	*2,778*	*2,800*	*2,800*	*0*	*0.0%*
Southeastern Power Administration	*41*	*41*	*42*	*1*	*2.4%*
Southwestern Power Administration	*174*	*175*	*177*	*2*	*1.1%*
Western Area Power Administration	*1,071*	*1,169*	*1,075*	*-94*	*-8.0%*
Colorado River Basin Power Marketing Fund	*183*	*161*	*189*	*28*	*17.4%*
Boulder Canyon Project	——	——	*26*	*26*	*N/A*
Total, Full time equivalent employment (FTEs)	*4,253*	*4,347*	*4,309*	*-64*	*-1.5%*

The FY 2000 budget requests for the Power Marketing Administrations continue their commitments of service to their customers at the lowest possible rates while maintaining repayment to the Treasury. With the capital side of the Bonneville Power Administration, Bonneville meets its capital investment requirements for transmission, power, fish and

wildlife, energy efficiency, and capital equipment. Bonneville's fish and wildlife capital program implements the Administration's agreement on Bonneville Power Administration fish and wildlife support.

FY 2000 Budget Request

Alaska Power Administration - $0.0 million

No funding is requested for APA in FY 2000 due to the termination of the agency.

Southeastern Power Administration - $4.7 million

The Southeastern Power Administration (SEPA) FY 2000 program level is $4.7 million, funded entirely by prior year balances. This funding covers program direction requirements for 42 FTEs. SEPA will: market all available power giving preference to public bodies and cooperatives; ensure that each power system control area receives for each month of the fiscal year, a Control Compliance Rating of "Pass" using the North America Electric Reliability Council performance standard; meet planned repayment of principal on Power Investment; and achieve a safety performance of at most 3.3 recordable accident frequency rate for recordable injuries per 200,000 hours worked, or the Bureau of Labor Statistics industry rate, which ever is lower.

Southwestern Power Administration - $27.9 million

The Southwestern Power Administration FY 2000 funding level is $27.9 million and $4.2 million in non-federal reimbursable authority. The majority of the funding is dedicated to program direction for 177 FTEs to conduct all activities connected with the marketing and delivery of federally generated hydroelectric power to customers; transmission line, substation, and communication system maintenance; and for equipment replacements at facilities associated with the transmission system.

In FY 2000, Southwestern will: market and deliver all available hydroelectric power as measured by the amount of firm capacity and associated energy delivered, economic benefits realized, and fossil fuels saved; ensure that each power system control area receives for each month of the fiscal year, a Control Compliance Rating of "Pass" using the North America Electric Reliability Council performance standard; meet planned repayment of principal on Power Investment; and achieve a safety performance of at most 3.3 recordable accident frequency rate for recordable injuries per 200,000 hours worked, or the Bureau of Labor Statistics industry rate, which ever is lower.

Western Area Power Administration - $171.5 million

The Western Area Power Administration FY 2000 Construction, Rehabilitation, Operation and Maintenance program is funded at a total of $171.5 million. Over half of the total funding, $104.5 million, covers program direction for 1,075 FTEs who perform operations, maintenance and construction activities associated with Western's transmission system and other power marketing activities.

The remaining funding includes: $35.1 million for Western's operation and maintenance program which provides materials, supplies, equipment, and technical services used in direct support of the operation and maintenance of the interconnected power system; $26.8 million for construction and rehabilitation activities which include replacements and upgrades of Western's existing infrastructure; and $5.0 million is included for Western's contribution to the Utah Reclamation, Mitigation and Conservation account.

There is no appropriation request for Boulder Canyon Project activities. Beginning in FY 2000, Western will spend directly out of the Colorado River Dam Fund for operation and maintenance activities associated with the Boulder Canyon Project. The Colorado River Dam Fund is a revolving fund operated by the Interior Department's Bureau of Reclamation. Authority for Western to obligate directly from the Colorado River Dam Fund comes from Section 104 (a) of the Hoover Power Plant Act of 1984.

A total of $1.3 million is requested for the operation and maintenance of the hydroelectric facilities at the Falcon and Amistad dams. Operation of the Colorado River Basins Power Marketing program on a revolving fund basis continues at an estimated FY 2000 level of $113.6 million in spending authority from offsetting collections with a staffing level of 189 FTEs.

In FY 2000, Western will seek the following four performance objectives: control cost growth in regular operation and maintenance to no more than the annual rate of inflation; ensure that each power system control area receives for each month of the fiscal year, a Control Compliance Rating of "Pass" using the North America Electric Reliability Council performance standard; meet planned repayment of principal on Power Investment; and achieve a safety performance of at most 3.3 recordable accident frequency rate for recordable injuries per 200,000 hours worked, or the Bureau of Labor Statistics industry rate, which ever is lower.

Bonneville Power Administration

In FY 2000, the Bonneville Power Administration budget includes $352.0 million in borrowing authority for capital investments. These investments provide electric utility and general plant associated with the Federal Columbia River Power System's transmission services, capital equipment, hydroelectric projects, conservation and capital investments in environment, fish and wildlife. Over half of the capital investments in FY 2000, $210.0 million, are for the transmission business line to provide for additions, upgrades and replacements to the federal transmission system, and for pollution prevention and abatement activities in compliance with environmental laws and regulations and to mitigate environmental risks associated with operation of the power system. Funding of $79.3 million is allocated to additions, improvements and replacements of existing U.S. Bureau of Reclamation and Corps of Engineers hydroelectric projects in the Pacific Northwest. Funding of $27.0 million is allocated to resource protection, enhancement and mitigation of Columbia River Basin fish and wildlife losses attributed to the development and operation of federal hydroelectric projects on the Columbia River and its tributaries.

In FY 2000, Bonneville will strive for the following outputs:

- Improved overall customer satisfaction;
- Increase the value of the BPA business and sharing of benefits;
- Be the lowest cost producer of power and transmission services;
- Maintain financial integrity;
- Maintain a recordable injury rate below the industry average and beat the competitive benchmark for system average interruption frequency index;
- Keep the power system safe and reliable;

- Invest in environmental results to maintain its competitiveness; and,
- Transform itself into a high-performing business oriented organization.

Bonneville's FY 2000 budget has been prepared on the basis of its three major areas of activity: power, transmission, and conservation and energy efficiency services. This new structure supports Bonneville's reorganization undertaken to become more competitive in the rapid restructuring of the wholesale electric energy market. This effort stems largely from the 1992 Energy Policy Act and ensuing Federal Energy Regulatory Commission (FERC) orders, (FERC orders 888 and 889) requiring separation of utilities' power and transmission functions. As a federal agency, Bonneville is not bound by law to comply with the orders, but chose to comply with the FERC orders because it views compliance as essential to successfully competing in the electric power market of the future. Further, Bonneville supports DOE's October 1995 "Power Marketing Administration Open Access Policy."

Bonneville's budget also reflects the utility business and public benefits forecast in its 1996 rate case filed with FERC which became effective October 1, 1996. Bonneville's budget estimate may have to change to enable Bonneville to meet its statutory responsibilities and fulfill its legislative and executive obligations as the electric utility industry evolves. This changing environment includes the final recommendations of the Comprehensive Review of the Northwest Energy System (the Regional Review) which were received by the governors of Idaho, Montana, Oregon, and Washington in December 1996. The Regional Review served as a forum for discussion concerning the restructuring of the electric utility industry and what it will mean to the Pacific Northwest. The governors appointed a transition board to prepare a strategic plan on implementing the regional review's recommendations and, consistent with a Northwest Congressional delegation request, initiated a review of Bonneville's cost management issues. The review recommends cost reductions and operational efficiencies averaging $146.0 million annually over the 2002-2006 period. Bonneville's FY 2000 Congressional budget reflects the expected final impacts from implementation of the cost review recommendations under current legislation.

Highlights of Program Changes ($ in millions)

Southeastern Power Administration *(FY 1999 $10.5; FY 2000 $4.7)* **-$5.8**

Program direction increases $0.3 million from $4.4 million to $4.7 million due to the pay raise, within grade increases, one additional FTE which is needed to work on Information Management activities, and an increase in Information Management support costs due to the need to install equipment and communication lines to connect the Corps project Supervisory Control and Data Acquisition Systems (SCADA) systems and the Southeastern Power Administration. Purchase Power and Wheeling decreases $6.1 million to zero due to a change of policy noted in the Program Overview section. *(FY 1999 $10.5; FY 2000 $4.7)*

Southwestern Power Administration *(FY 1999 $26.0; FY 2000 $27.9)* **+$1.9**

Operations and maintenance increases by $0.9 million, from $2.7 million to $3.6 million, due to the need to replace additional circuit breakers and potential transformers which are beyond their useful life, SCADA upgrades and the need to implement new legal requirements in the cultural resources, environmental and field safety programs. Purchase Power and Wheeling decreases $0.1 million to zero due to the change of policy noted in the Program Overview section. Construction overall has no significant change, a $0.1 million decrease from $6.8

million to $6.7 million. Program Direction increases by $1.2 million, from $16.4 million to $17.6 million, due primarily to increases in salaries and benefits resulting from regional pay surveys as required by union agreement, the need to fund awards which were previously funded by prior year carryover and FTS 2000 local services telecommunication charges. *(FY 1999 $26.0; FY 2000 $27.9)*

Western Area Power Administration *(FY 1999 $223.6; FY 2000 $171.5)* **-$52.1**

Program Direction decreases $2.9 million from $107.4 million to $104.5 million because of a decrease of $4.4 million in salaries and benefits, travel and other related expenses due to a decrease of 94 FTEs funded out of this account, this decrease is comprised of: 40 FTEs due to efficiency gains achieved by Western; 26 FTEs due to the use of Western's authority to spend directly out of the Colorado River Dam Fund for operation and maintenance activities associated with the Boulder Canyon Project; and 28 FTEs transferred to project activities funded from the Colorado River Basins Power Marketing Fund, offset by an increase of $1.5 million in support services due to the budgeting for computer-aided drafting and engineering support which previously was inadvertently budgeted in O&M.

Operations and Maintenance decreases $1.4 million from $36.5 million to $35.1 million due to a decrease of $0.5 million in permanent authority for the Boulder Canyon Project for the same reason as stated in Program Direction above, and an overall decrease of $0.9 million in the O&M activity.

Purchase Power and Wheeling decreases $53.9 million to zero due to a change of policy noted in the Program Overview section above.

Construction and Rehabilitation increases $6.0 million from $20.8 million to $26.8 million due primarily to a need to perform additional transmission line and substation upgrade and rehabilitation due to age deterioration. (*FY 1999 $223.6; FY 2000 $171.5)*

Colorado River Basins Power Marketing Fund *(FY 1999 -$16.1; FY 2000 -$21.0*) **-$4.9**

The budget offset increases -$4.9 million to -$21.0 million and is comprised of an increase of $17.8 million in offsetting collections offset by an increase of $12.9 million in the program operating expenses from $100.7 million to $113.6 million. This increase is comprised of a $10.1 million increase in Equipment, Contracts and Related Expenses and $2.8 million in Program Direction. The increases are primarily for purchase power and wheeling costs due to Western's increased annual firm contract commitment, operational changes that result from the Glen Canyon Dam EIS Record of Decision, periods of test flows associated with endangered fish research, and 28 additional FTEs needed to accomplish planned activities in this account. The increases are offset by decreases in supplies and reduced interest payments. *(FY 1999 -$16.1; FY 2000 -$21.0)*

Bonneville Power Administration *(FY 1999 $258.0; FY 2000 $352.0)* **$94.0**

Power Business Line program activity increases $23.0 million from $56.0 million in FY 1999 to $79.0 million in FY 2000 due to additional improvements and replacements of existing U.S. Bureau of Reclamation and Corps of Engineers hydroelectric projects. Transmission Services increases $74.0 million from

$136.0 million to $210.0 million due to the Southwest Oregon services and fiber optic projects. Conservation and Energy Efficiency activities decrease $13.0 million from $14.0 million to $1.0 million due to the closeout of conservation acquisition programs consistent with BPA's new approach to developing conservation resources though the use of non-government funds. *(FY 1999 $258.0; FY 2000 $352.0)*

Federal Energy Regulatory Commission

Mission

The Commission regulates essential interstate aspects of four of the nation's critical energy industries: electric power transmission and sales for resale; natural gas transportation and sales for resale; oil pipeline transportation; and nonfederal hydroelectric power. The Commission ensures that the rates, terms, and conditions of service for the electric power, natural gas, and oil industries are just and reasonable and not unduly discriminatory or preferential, and that licensing, administration, and safety actions for the hydropower industry and other approvals for all four industries are consistent with the public interest.

Program Overview

In FY 2000, the Commission will maintain its focus on environmental issues and compliance in all program areas. In addition, the Commission will continue to encourage competitive markets where appropriate, while maintaining more traditional forms of regulation where competitive markets do not exist or market forces do not work to protect the public interest. This will be accomplished through on-going implementation of the Energy Policy Act of 1992 and other authority under the Federal Power Act, including reducing barriers to competition and generation in the electric power industry. Since passage of the Act, the Commission has aggressively pursued policies designed to foster competition in wholesale electric power markets. In April 1996, the Commission issued Order No. 888, which requires all public utilities that own, control, or operate electric transmission facilities to provide nondiscriminatory open access transmission services and allows utilities to seek full recovery of stranded costs. A companion order, Order No. 889, requires nondiscriminatory access to information about electric transmission facilities. With implementation of these initiatives, the nation will see the most sweeping transformation in the electric power industry since the passage of the Federal Power Act in 1935.

This expanded competition also is changing the economics and conditions under which hydroelectric projects are developed and operated. Passage of Order No. 596 in October, 1997 gives the hydroelectric power industry additional alternatives for preparing project proposals. These alternatives are designed to help resolve issues, achieve settlements, and complete environmental documents before applications are filed, to speed Commission decisions after filing.

Budget Overview

The Commission's budget request for FY 2000 is $179.9 million. This request funds 1,320 FTEs, the same number as in FY 1999. The Commission will recover the full cost of its operations through a system of annual charges and fees, resulting in a net appropriation in FY 2000 of $0.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Federal Energy Regulatory Commission					
Federal Energy Regulatory Commission	162,141	167,500	179,900	12,400	7.4%
FERC Offsetting Collections	-162,141	-167,500	-179,900	-12,400	-7.4%
Total, Federal Energy Regulatory Commission	——	——	——	——	——
Fees & recoveries in excess of appropriation	-10,159	-29,446	-28,342	1,104	3.7%
Full Time Equivalent Employment (FTEs)	*1,318*	*1,320*	*1,320*	——	——

Highlights of Program Changes ($ in millions)

The FY 2000 budget request reflects the Commission's changing regulatory priorities, resulting from three factors: 1) the need to process the huge surge in workload and respond to the changing needs of the electric power industry as the Commission continues to implement the restructuring of the industry and addresses major issues such as open-access and stranded costs; 2) the pursuit of new strategic and structural arrangements to further the competitive initiatives of Order Nos. 436, 500, and 636 for the natural gas pipeline industry; and 3) the filing of the first group of relicense applications for projects with licenses that expire between 2000 and 2010, many of which are large capacity projects composed of several developments.

Nuclear Waste Disposal

Mission

The mission of the Office of Civilian Radioactive Waste Management is to manage and dispose of the Nation's spent nuclear fuel and high-level radioactive waste. The Office of Civilian Radioactive Waste Management (OCRWM) leads the Department's efforts in developing and implementing strategies to accomplish this mission, to assure public and worker health and safety, protect the environment, merit public confidence, and be economically viable.

Program Overview

The office was formed by the Nuclear Waste Policy Act of 1982. The Act established responsibility and a framework to provide for the permanent disposal of spent nuclear fuel from commercial utilities and high-level radioactive waste generated from atomic energy defense activities. The Nuclear Waste Policy Amendments Act of 1987 designated the Yucca Mountain, Nevada, site for detailed scientific investigation to evaluate the site's suitability for a geologic repository.

The OCRWM program consists of three major subprograms: 1) the Yucca Mountain Site Characterization Project; 2) Waste Acceptance, Storage and Transportation; and, 3) Program Integration. It also includes a Program Direction decision unit.

Yucca Mountain Site Characterization

The Yucca Mountain Site Characterization Project includes all scientific and technical evaluation activities necessary to assess the suitability of the site for a geologic repository. In the past, these activities largely involved the construction of the Exploratory Studies Facility construction and the collection of basic scientific data. It includes the following elements: Core Science, Design and Engineering, Licensing/Suitability and Performance Assessment, National Environmental Policy Act, Operations/Construction, Project Management, and External Oversight and Payments-Equal-to-Taxes.

The Viability Assessment (VA), required by the FY 1997 Energy and Water Development Appropriation and published in December 1998, compiles the results of nearly 16 years of scientific and technical evaluation conducted at the Yucca Mountain site. The VA describes the site, preliminary repository and waste package designs, and details on how the site's engineered and natural barriers work together as a system. It also details the activities and costs required to submit a License Application to the Nuclear Regulatory Commission (NRC), as well as an estimate of the costs to construct and operate a repository at the Yucca Mountain site.

The VA now provides the foundation for the current and planned set of activities within the Yucca Mountain Site Characterization Project. The program is focused on completing activities that support the remaining key near-term milestones identified in the Nuclear Waste Policy Act – the issuance of the Final Environmental Impact Statement (FY 2000), Secretarial decision on whether to recommend the Site to the President (FY 2001), and the submission of a License Application to the NRC (FY 2002).

Waste Acceptance, Storage & Transportation

Waste Acceptance, Storage and Transportation Activities focus on the development of a national transportation capability to remove spent nuclear fuel from reactor sites, as well as supporting studies and regulatory and stakeholder activities. This initiative involves a procurement process for contracts with the private sector to acquire needed waste acceptance and transportation services, including the fabrication of canisters, transport casks and storage modules, as well as transportation operations.

Accelerator Transmutation of Waste

The evaluation of Accelerator Transmutation of Waste (ATW) was initiated in FY 1999 in response to Congressional Direction contained with the FY 1999 Energy and Water Development Appropriation. The purpose of the effort is to assess the application and feasibility of advanced accelerator technology to the transmutation of high-level defense waste. No funding for of these efforts is requested in FY 2000.

Program Integration

Program Integration provides management support and program integration to both the Yucca Mountain Site Characterization Project and the Waste Acceptance, Storage and Transportation activities. It includes quality assurance, program management, and human resources and administration.

Program Direction

Program Direction provides the overall direction and administrative support of the OCRWM program, including all costs associated with the Federal workforce.

Budget Overview

The Civilian Radioactive Waste Management Program is funded through the Nuclear Waste Disposal and the Defense Nuclear Waste Disposal appropriations. The Nuclear Waste Disposal funding is appropriated from the Nuclear Waste Disposal Fund, which is financed by fees from the ratepayers of nuclear utilities. The Defense funding is provided as a General Fund appropriation to offset the costs of disposing of the Department's high-level waste generated from atomic energy defense activities. While the program direction requirements are funded from within the Nuclear Waste Disposal appropriation, the balance of OCRWM activities are funded jointly from the two accounts, with few exceptions.

The FY 2000 budget request is for a total of $409.0 million, which is offset by the use of $39.0 million of previously appropriated funds. Of the $370.0 million new budget authority request, $297.0 million is to be derived from the Nuclear Waste Disposal appropriation, and $73.0 million is to be derived from Defense Nuclear Waste Disposal. The balance of the program requirements will be supported through the release and transfer (to Nuclear Waste Disposal) of $39.0 million of the $85.0 million reserve appropriated in the FY 1996 Defense Nuclear Waste Disposal. The FY 2000 request supports the requirements identified in the Viability Assessment.

Nuclear Waste Disposal

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Nuclear Waste Disposal - Financing					
Nuclear Waste Disposal Fund	156,000	165,000	258,000	93,000	56.4%
General Fund	——	4,000	——	-4,000	-100.0%
Plus transfer from Defense Nuclear Waste Disposal	——	——	39,000	39,000	N/A
Total, Nuclear Waste Disposal	156,000	169,000	297,000	128,000	75.7%
Defense Nuclear Waste Disposal					
Defense Nuclear Waste Disposal	190,000	189,000	112,000	-77,000	-40.7%
Less transfer to Nuclear Waste Disposal	——	——	-39,000	-39,000	N/A
Total, Defense Nuclear Waste Disposal	190,000	189,000	73,000	-116,000	-61.4%
Total, Nuclear Waste Disposal- Financing	346,000	358,000	370,000	12,000	3.4%
Nuclear Waste Disposal — Activities					
Yucca mountain site characterization	267,710	282,414	331,667	49,253	17.4%
Waste acceptance, storage and transportation	5,947	1,850	5,730	3,880	209.7%
Accelerator transmutation of waste	——	4,000	——	-4,000	-100.0%
Program integration	9,863	11,250	11,792	542	4.8%
Program direction	62,480	58,486	59,811	1,325	2.3%
Subtotal, Nuclear Waste Disposal	346,000	358,000	409,000	51,000	14.2%
Less use of previously appropriated funds	——	——	-39,000	-39,000	N/A
Total, Nuclear Waste Disposal — Activities	346,000	358,000	370,000	12,000	3.4%
Full time equivalent employment (FTEs)	*202*	*196*	*195*	*-1*	*-0.5%*

FY 2000 Budget Request

The FY 2000 request allocates $331.7 million to continue characterization of the Yucca Mountain site, a *$49.3 million or 17.4 percent increase over the comparable FY 1999 level*. The increase over the FY 1999 level reflects the profile of activities identified within the VA. The request supports the completion of scientific and technical work necessary to determine whether the Yucca Mountain site is suitable for development as a geologic repository and the development of the documentation needed to support a Secretarial decision on Site Recommendation.

The FY 2000 request also provides $5.7 million for Waste Acceptance, Storage and Transportation activities, a $3.9 million or 209.7 percent increase over the comparable FY 1999 level. This funding will provide for continuation of the core activities that will precede removal and transportation of spent nuclear fuel from reactor sites to a federal facility. In particular, a request for proposal will be updated and finalized during FY 2000 for the waste acceptance and transportation services. OCRWM intends to structure this procurement as a market-driven initiative.

The request also provides $11.8 million for program integration activities, which include systems and regulatory integration, strategic planning, and program and information management.

The program direction portion of the request is $59.8 million. These activities include funding for federal salaries, benefits, travel, support services, and other related services.

Highlights of Program Changes ($ in millions)

Yucca Mountain Site Characterization *(FY 1999 $282.4; FY 2000 $331.7)* **+$49.3**

- Decrease in Core Science reflects a reduction in site characterization work, offset by increases in external research and support for Russian Scientists' efforts. Testing activities now largely support License Application, rather than Site Recommendation. (-$0.9)
- Increase in Design and Engineering reflects design activities and alternatives necessary to complete the Site Recommendation design products. This increase is offset in part by the decrease in systems engineering efforts as designs are finalized. (+$13.1)
- Increase in Suitability/Licensing and Performance Assessment reflects the development and coordination of the Site Recommendation Report, the review of the Working Draft License Application, and increased technical information activities necessary to satisfy the Nuclear Regulatory Commission's License Application requirements. (+$8.1)
- Increase in National Environmental Policy Act reflects additional support required to respond to the public review of the Final Environmental Impact Statement, which will be published in FY 2000. (+$0.4)
- Increase in Operations/Construction reflects the additional work to be carried over the Cross-Drift, and required upgrades of the Exploratory Studies Facility systems. (+$8.5)
- Project Management increase reflects the costs associated with a one-year extension on the office building in Las Vegas, as well as the increase information technology activities in support of licensing activities. (+$9.4)
- Increase in External Oversight and Payments-Equal-to-Taxes (PETT) reflects a planned increase in PETT to Nye County as a result of site improvements. (+$10.7)

Waste Acceptance, Storage & Transportation *(FY 1999 $1.8; FY 2000 $5.7)* **+$3.9**

- Increase in Transportation reflects the development of the request for proposal for waste acceptance and transportation services. (+$4.1)
- Decrease in Spent Fuel Storage reflects the completion of activities, as the NRC's safety assessment report for the Centralized Interim Storage Facility Topical Safety Report is scheduled to be received in FY 1999. (-$0.3)
- Increase in Waste Acceptance reflects expanded efforts to address safeguards and security issues. ($0.1)

Accelerator Transmutation of Waste *(FY 1999 $4.0; FY 2000 $0.0)* **-$4.0**

- Decrease reflects completion of the FY 1999 work scope related to the identification of critical technical issues needed to determine the feasibility of advanced accelerator technology to the transmutation of high-level defense.

Program Integration *(FY 1999 $11.3; FY 2000 $11.8)* **+$0.5**

- Increase in Program Management reflects increased efforts to assure integration of major programmatic decisions. (+$0.2)
- Increase in Human Resources and Administration supports maintenance of information management systems and networks. (+$0.3)

Program Direction *(FY 1999 $58.5; FY 2000 $59.8)* **+$1.3**

- Increase in Salaries and Benefits reflects additional funding needed to support general pay increases, promotions, and within grade increases. (+$0.5)
- Increase in Support Services largely reflects increases in technical support services due to expanded work scope necessitated by additional critical review requirements for key Yucca Mountain activities and work products. (+$0.7)
- Increase in Other Related Expenses is due to inflation. (+$0.1)

Fossil Energy Research and Development

Mission

The mission of the Fossil Energy (FE) Research and Development (R&D) program is to stimulate sustainable development and utilization of the nation's fossil fuel resources and technologies to assure an ample, secure, clean, and low cost domestic supply of energy. This mission will be executed in a way that assures U.S. global leadership in fossil energy technology; protects the local, regional, and global environment; merits public trust; promotes public-private partnerships; and contributes to a stronger economy.

Program Overview

The U.S. is reliant on fossil fuels for about 85 percent of the energy it consumes and is expected to remain dependent on fossil fuels for at least the next twenty years. A key goal of the Department's fossil energy activities is to ensure economic benefits from low-priced fossil fuels, a strong domestic industry, and export-related jobs do not come with unacceptable environmental costs or energy security risks. The programs in this budget include a portfolio of activities designed to accomplish this goal**.**

For electric power generation, there are multiple upcoming issues related to environmental protection. Such issues include the level of sulfur dioxide (SO_2) and nitrogen oxide (NO_X) emissions, as well as small particulate emissions and air toxics, land use constraints, and greenhouse gas emissions. R&D addressing these concerns is funded under the Coal and Gas programs, and includes R&D on clean power systems that will achieve over 60 percent efficiencies, no net carbon dioxide emissions, produce power at a low cost, and be competitive with the best pulverized coal plants, as well as alternative transportation fuels that will, in conjunction with engine technology, double fuel combustion efficiency and significantly reduce the emissions generated by the transportation industry.

Natural gas can also help the U.S. meet many of its environmental goals. Yet, to ensure the long-term supply and affordability of our cleanest fossil fuel, continued R&D is needed to improve exploration, production, processing, and storage technologies. Much of the nation's natural gas resource is locked in complex, difficult-to-produce formations. In many existing fields, natural gas has been bypassed by conventional exploration and production technologies. More than a quarter of our known gas supply is below pipeline quality and cannot be used unless upgraded. A potentially vast quantity of natural gas exists in remote regions and could remain unmarketable unless lower-cost approaches are developed to transport this gas to waiting markets. Guided by consultations with industry, the Department's FY 2000 budget will continue cost-sharing partnerships with the private sector to address these and other issues that are critical to ensuring long-term consumer confidence in the availability of affordable natural gas supplies.

The availability of reliable oil supplies is also key to our future economic growth and to national energy security. The U.S. currently depends on imports for over half of its oil supplies, and by 2015 this dependence is projected to increase to more than 68 percent, with supplies increasingly concentrated in historically unstable regions of the world. At the same time, U.S. oil production continues to decline as wells with high remaining production

potential continue to be abandoned. To concentrate its resources on the most pressing problems, the Department's Fossil Energy program has integrated its R&D activities in petroleum and natural gas to take maximum advantage of technologies that benefit both oil and gas production, for example the development of advanced seismic technologies, new drilling systems, and more cost-effective environmental compliance options.

This R&D could help stabilize domestic oil production beginning around the year 2005, perhaps increasing the flow of oil from U.S. fields by over 500,000 barrels of oil per day above business as usual projections by 2010. Advanced technologies developed in the cost-shared program with industry could also contribute directly to more than a third of the additional six trillion cubic feet per year of domestic gas production likely to be needed by 2010 to meet energy and environmental demands. Also, by working with industry and federal, state, and local regulatory authorities to ensure that risk-based environmental protection measures are scientifically sound and can be effectively implemented at potentially reduced costs, the Department can ultimately help reduce environmental compliance costs in the oil and gas industry by $16.0 billion by 2010, allowing more resources to be applied to finding and producing needed supplies of domestic fuels.

Budget Overview

The FY 2000 request for Fossil Energy Research and Development is $375.0 million including $11 million from prior year balances for a net FY 2000 request of $364.0 million. This level continues investments in advanced technological concepts. Such concepts include the capture and sequestration of CO_2 as well as the development of advanced power generation and fuel producing technologies that could reduce, or perhaps nearly eliminate, carbon emissions from fossil fuel facilities. For a world that is nearly 90 percent dependent on fossil fuels, the development of new technologies for more affordable greenhouse gas control could improve the likelihood of a truly global commitment to meeting the challenges of climate change.

The FY 2000 natural gas and petroleum program continues to emphasize technology transfer, especially to independent producers that make up an increasingly large share of the domestic oil and gas industry. The FY 2000 program also includes support for follow-on advanced oil recovery projects, especially where prior field tests have shown that such projects could be the difference in keeping oil flowing in fields that otherwise would be abandoned. Also, the FY 2000 budget begins implementing a long-term effort in methane hydrates to take advantage of technological advancements in detection and production made in the past decade. The budget also sustains an investment in university and national laboratory research that strengthens the technological foundation for future oil and natural gas production advances.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Fossil Energy Research and Development					
Coal					
Advanced clean fuels research	15,559	15,528	14,500	-1,028	-6.6%
Advanced clean/efficient power systems	72,420	87,676	84,737	-2,939	-3.4%
Advanced research and technology development	17,312	19,939	23,195	3,256	16.3%
Total, Coal	105,291	123,143	122,432	-711	-0.6%
Petroleum — Oil technology	47,708	48,616	50,166	1,550	3.2%
Gas					
Natural gas research	69,305	71,007	67,665	-3,342	-4.7%
Fuel cells	39,156	44,200	37,649	-6,551	-14.8%
Total, Gas	108,461	115,207	105,314	-9,893	-8.6%
Program direction and management support					
Headquarters program direction	14,659	15,049	16,016	967	6.4%
ETC program direction	52,171	54,432	56,063	1,631	3.0%
Total, Program direction & management support	66,830	69,481	72,079	2,598	3.7%
Plant and capital equipment	2,532	2,600	2,000	-600	-23.1%
Fossil energy environmental restoration	12,935	11,000	10,000	-1,000	-9.1%
Cooperative research and development	5,686	6,836	5,836	-1,000	-14.6%
Fuels conversion, natural gas and electricity	2,173	2,173	2,173	——	——
Advanced metallurgical processes	4,965	5,000	5,000	——	——
Subtotal, Fossil Energy Research & Development	356,581	384,056	375,000	-9,056	-2.4%
Use of prior year balances	-64	——	-11,000	-11,000	NA
Total, Fossil Research and Development	356,517	384,056	364,000	-20,056	-5.2%
Full time equivalent employment (FTEs)	*660*	*679*	*681*	*2*	*0.2%*

FY 2000 Budget Request

Coal - $122.4 million

The FY 2000 request for the research and development of advanced coal-related technologies is $122.4 million which basically flat with FY 1999. This funding level will permit the Coal R&D Program to build on earlier research that has brought solutions to environmental problems, such as acid rain control, and to begin applying these advances to improvements that can reduce, or one day eliminate, emissions of greenhouse gases and other air pollutants from coal.

The FY 2000 program, for example, will begin to couple progress made to date in advanced gasification and combustion systems, coal conversion, and environmental controls, with potentially revolutionary approaches to carbon sequestration, in a new concept called the "Vision 21 Powerplex." Initially, the "Vision 21 Powerplex" represents a "road map" guiding

coal and other advanced power and fuels R&D toward a common goal of maximizing efficiency and improving environmental performance. In conjunction with the zero emissions goal of vision 21 program, carbon sequestration research continues to be emphasized and will be expanded in FY 2000. This research effort focuses on the development of advanced, low cost ($10/ton of carbon) methods for virtually eliminating carbon emissions. Coupled with efficiency improvements, this may be the single most important initiative for achieving cost-effective reduction of green house gas emissions. Ultimately, as new technologies evolve, "Vision 21" could become the basis for the "ultimate" fossil fuel-based energy facility, a concept that would integrate high-technology "energy islands," each producing power, fuels, and/or chemicals in the most efficient, flexible, and cleanest manner possible.

The FY 2000 program builds toward this long-range vision while, at the same time, providing additional benefits. For example, in FY 2000, the final phase of development for a new low-emission boiler system, the next major advance in pulverized coal combustion, will be well underway. The FY 2000 program continues efforts to develop advanced technologies for controlling fine particulates from power plants in response to the Environmental Protection Agency's revised Particulate Matter ($PM_{2.5}$) ambient standards for airborne particles. It also addresses concerns over mercury and other air toxic emissions by continuing to examine ways to capture these impurities before they escape into the atmosphere.

The FY 2000 program also sustains research efforts to produce alternative low emission, high combustion efficiency transportation fuels, premium chemicals, and high valued carbon products from coal. These technologies are being developed to work individually or in combination with electric power generation processes to contribute to a Vision 21 Powerplex. This activity is the end result of a major effort to redirect the focus of the program to complement changes experienced in, or projected to occur in the transportation sector and to support ongoing gas-to-liquids research which would utilize many of the same chemical processes.

Advanced research on sequestration is an emerging area of interest because the potential for greenhouse gas reduction, particularly carbon dioxide, is so large, and because it the most promising approach that is compatible with the existing energy infrastructure. Sequestration research includes a broad range of physical, chemical and biological options, which will be done in collaboration with other parts of the Department, national laboratories, other countries, and industrial firms. In FY 2000, Fossil Energy will initiate development of biological CO_2 sequestration by conversion into useful products such as liquid fuels.

Petroleum - $50.2 million

The FY 2000 request for oil technology activities is $50.2 million which is an increase from the FY 1999 appropriation of $48.6 million. Improved oil production technologies are needed to help reverse the decline in domestic oil production and the corresponding growth in oil imports, a key strategy detailed in the April 1998 Comprehensive National Energy Strategy (CNES). The majority of DOE's oil technology program continues to focus on providing independent producers with advances that can keep oil flowing from U.S. reservoirs that would likely be abandoned with conventional technology. In the FY 2000 budget, funding for a preferred "Petroleum Upstream Management Practices" (PUMP) Program will be initiated, focusing on data management and effective environmental compliance. DOE is also proposing to revisit several high-priority reservoir classes where prior field tests have revealed production issues that can be overcome by better technology. Funding is also proposed for activities that can lead to more effective environmental protection in oil and gas operations

and the production of fuels that release fewer emissions affecting global climate change. Throughout each of these efforts, a strong technology transfer program is supported.

Gas - $105.3 million

The FY 2000 request for gas-related R&D is $105.3 million. Domestic natural gas consumption is expected to rise to more than 30 trillion cubic feet per year by 2015 (a one-third increase) because of its highly competitive cost and its cleanliness and efficiency. Gas can also provide a low cost means to slow the rate of carbon dioxide emissions and will be a significant energy source for moderating carbon emissions well into the middle of the next century. New resources of gas, such as methane hydrates, could prove to be a very large source of production worldwide. The supply portion of the gas budget, $25.9 million, will continue to focus on advanced technologies that can locate and produce gas that otherwise would be bypassed or unmarketable. In addition, an R&D program in methane hydrates is being developed with the goal of converting the large potential gas hydrate resource (estimated at up to 200,000 trillion cubic feet) into gas reserves. The program is in its infancy. In FY 2000, Fossil Energy will identify a site containing gas hydrates suitable for testing the feasibility of methane recovery. The gas budget also continues to support two high-priority power generation technologies -- high-efficiency gas turbines and advanced fuel cells -- that could enhance the future use of natural gas, as well as ultimately contribute to higher-efficiency coal-based power generation. In the advanced gas turbine program, DOE will complete full-scale component/subsystem testing and engine manufacturing, and begin preparations for full speed prototype testing of a new class of gas turbines with unprecedented efficiencies and environmental performance ($41.8 million). The fuel cell program in FY 2000 will continue R&D to reduce costs and improve performance for market-ready systems early in the next decade ($37.6 million). In FY 2000, the program will begin testing of the first market prototype solid oxide fuel cell at commercial sites for distributed power applications. In addition, $5.0 million of fuel cell activity is included in the Vision 21 activity in the coal program.

Advanced Metallurgical Processes - $5.0 million

DOE is requesting $5.0 million for Advanced Metallurgical Processes. In FY 2000, the program will continue its research in advanced materials that can contribute to the Office of Fossil Energy's "Vision 21 Powerplex" concept. In addition, research will continue on metallurgical techniques to extend the life of materials and/or find substitute materials and processing paths for materials that are environmentally hazardous.

Highlights of Program Changes ($ in millions)

Advanced Clean Efficient Power Systems *(FY 1999 $87.7; FY 2000 $84.7)* **-$3.0**

FY 2000 funding completes the final phase of development for this advanced pulverized combustion technology with construction and operation of an 80-megawatt proof-of- concept unit in 2001. *(FY 1999 $14.9; FY 2000 $3.0)* -$11.9

Increase for Advanced Research Environmental Technology for additional monitoring stations to better understand the contribution of emissions from coal-fired power plants to ambient Particulate Matter ($PM_{2.5}$) levels and to develop adequate ($PM_{2.5}$) precursors emission control technologies and exploratory research on novel and advanced concepts for greenhouse gas capture, separation, storage, and reuse. *(FY 1999 $19.1; FY 2000 $23.9)* +$4.8

Increases for Integrated gasification combined cycle reflect the funding of fuel cells related activities in support of Vision 21. *(FY 1999 $33.6; FY 2000 $38.6)* +$5.0

Advanced Research and Technology Development ***(FY 1999 $19.9; FY 2000 $25.3)*** **+$2.3**

Increases in funding provide for continued research of CO_2 capture and sequestration; development of the virtual demonstration plant, advanced materials research and enabling technology development, and, the redirection of research toward the grand challenges of the virtual demonstration plant.

Naval Petroleum & Oil Shale Reserves

Mission

The Naval Petroleum and Oil Shale Reserve's mission is to manage, operate, protect, maintain and produce the oil and gas from the Reserves in a manner to achieve the greatest value and benefits to the United States with consideration of the interests of joint owners.

Program Overview

The Defense Authorization Act, Public Law 104-106, required the Department to sell Naval Petroleum Reserve No. 1 (NPR-1 or Elk Hills), located near Bakersfield, California, by February 10, 1998. Accordingly, DOE structured a competitive sale, and, on October 5, 1997, announced an agreement to sell the government's interest in Elk Hills to Occidental Petroleum for $3.65 billion. Closing of the transaction occurred in February 1998. Even so, there are some ongoing close-out activities associated with the Government's divestment. These activities include settling final equity shares with Chevron USA, Inc., a co-owner of Elk Hills, and some environmental and cultural resource assessment work associated with transferring the property.

Public Law 105-85 required the transfer of administrative jurisdiction of Naval Oil Shale Reserve No. 1 (NOSR-1) and NOSR-3 to the Department of the Interior (DOI) for leasing. The transfer of the undeveloped lands was accomplished upon enactment, November 18, 1997. The developed portions are scheduled to be transferred on May 1, 1999, coinciding with DOI's leasing of these lands. The properties, located in Garfield County, Colorado, are adjacent to one another.

Production of Naval Petroleum Reserve No. 3 (Teapot Dome), located near Casper, Wyoming, will be maintained at maximum efficient rates. Under the Rocky Mountain Oilfield Testing Center (RMOTC) program, the Naval Petroleum and Oil Shale Reserves offers Teapot Dome to the oil industry for use as a working laboratory on a cost-sharing basis. The Naval Petroleum and Oil Shale Reserves program is exploring the possibility of transferring RMOTC to a consortium of private and educational institutions in 2001 for continued operation. In the meantime, work at Teapot Dome will increasingly focus on environmental remediation in preparation for lease, sale, or transfer to DOI when the oil field reaches the end of its economic life.

Budget Overview

No new funds are being requested for FY 2000. During the fiscal year, ongoing activities will be funded from prior year balances which resulted, in large part, from terminating operations at NPR-1 during FY 1998. FY 2000 ongoing activities include the continued operation of the Teapot Dome oil field, the Rocky Mountain Oilfield Testing Center, environmental remediation activities at Teapot Dome, environmental and cultural resource assessments at NPR-1 with some remediation activity anticipated, finalization of NPR-1 equity shares with Chevron, and continued oversight of the NPR-2 property and leases thereon.

Naval Petroleum & Oil Shale Reserves

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 1999 vs. FY 2000	
Naval Petroleum & Oil Shale Reserves	110,120	20,650	21,240	590	2.9%
Use of Prior Year Balances	-3,120	-6,650	-21,240	-14,590	--219.4%
Total, Naval Petroleum & Oil Shale Reserves	107,000	14,000	0	-14,000	-100%
Full time equivalent employment (FTEs)	*59*	*54*	*39*	*-15*	*-3%*

FY 2000 Budget Request

The FY 2000 budget of $21.24 million is to be funded entirely from prior year balances. Thirty-nine FTEs will support the Naval Petroleum and Oil Shale Reserve efforts, a reduction of 15 FTEs from FY 1999. NPR-3 will continue to produce oil, gas and natural gas liquids and sell them competitively into the commercial market.

NPR-1 and NPR-2 - $6.9 million

Prior year funding of $6.9 million will provide for post-sale closeout activities at NPR-1 and for oversight of the NPR-2 property and associated leases during FY 2000. NPR-1 post-sale closeout activities include ongoing engineering work related to the finalization of equity with Chevron; completing environmental restoration and remediation activities; financial close-out of contracts; archiving and disposal of records; documentation and characterization of environmental status; and settlement of workers' compensation and disability claims. NPR-2 oversight includes management of the Reserve and its leases, including collecting royalty payments of about $1.5 million annually.

NPR-3 and RMOTC - $8.3 million

Prior year funds of approximately $8.3 million will be used for conventional oil field operations and management during FY 2000 while preparing for an orderly abandonment of NPR-3 in future years. NPR-3 is projected to operate economically through 2003. The program is also increasing efforts to turn its Rocky Mountain Oilfield Testing Center (RMOTC) program over to a consortium of private and educational proprietors in 2001. Environmental remediation activities are being increased at NPR-3 in anticipation of the Department's eventual lease, sale, or transfer of the property as authorized in PL 105-261.

Program Direction - $6.0 million

The budget provides $6.0 million for program direction to be funded from prior year balances. Program direction provides for salaries, benefits and all overhead expenses such as supplies, travel, and support services, which are necessary for successful management of the Naval Petroleum and Oil Shale Reserves.

Revenues

Ongoing program operations generate revenues from the sale of crude oil, natural gas, and associated hydrocarbons. Deposits to the Treasury Miscellaneous Receipts Account are estimated to be $4 million in FY 2000.

Highlights of Program Changes ($ in millions)

Naval Petroleum Reserve *No appropriation is requested for FY 2000.* *Activities are to be funded from prior year balances.*	**$-14.0**
❖ Increase in planned NPR-1 closeout activities such as environmental and cultural resource assessments. *(FY 1999 $3.6; FY 2000 planned obligations from prior year balances: $6.9)*	$3.3
❖ Decrease in production related operations, environmental restoration activities, and general operational support at NPR-3. *(FY 1999 $10.2; FY 2000 planned obligations from prior year balances: $8.3)*	$-1.8
❖ Decrease in program direction requirements and FTE's. *(FY 1999 $6.9; FY 2000 planned obligations from prior year balances: $6.0)*	$-1.0
❖ Use of prior year balances *(FY 1999 use of prior year balances: $6.7; FY 2000 use of prior year balances: $21.2)*	$-14.5

Elk Hills School Lands Fund

Mission

The Defense Authorization Act, Public Law 104-106, authorizes the settlement of longstanding claims to certain Elk Hills lands by the State of California. Under the terms of the Act, a contingency fund has been established in the Treasury. The Settlement Agreement between the Department and the State provides for payment of nine percent of the net sales proceeds generated from the divestment of Elk Hills over a seven-year period.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 1999 vs. FY 2000	
Elk Hills School Lands Fund	——	36,000	36,000	——	——

Budget Overview

Provided funds are appropriated annually, the Department will pay the State of California $36.0 million each year for five years beginning in FY 1999. FY 2000 represents the second payment. Any remaining balance due after the five year period shall be paid in two equal installments in years six and seven unless the seventh payment is deferred due to delay in the equity finalization process. Due to the payment schedule, the net present value of the settlement equates to approximately 7 percent of the estimated net proceeds of sale. Accordingly, the FY 1999 budget requested $36.0 million for the first payment to the State of California.

Energy Conservation

Mission

The mission of the Office of Energy Efficiency and Renewable Energy is to work with its customers to lead the nation to a stronger economy, a cleaner environment, and a more secure future by developing and deploying efficient and renewable energy technologies that meet the needs of the public and the marketplace.

Program Overview

In a 1997 review of our national energy R&D portfolio, the President's Committee of Advisors on Science and Technology recommended expansion of a number of energy R&D programs and targeted energy efficiency programs in particular for the greatest increase. The Committee noted that energy efficiency technologies produce near-term and rapidly expanding public benefits, including reductions of air pollution, our dependency on oil, and energy costs to households and firms. According to the Committee's analysis, R&D investments in energy efficiency have contributed to efficiency improvements that save U.S. consumers approximately $170 billion per year. The Committee called for significant expansion of energy efficiency programs in order to meet the energy challenges and opportunities of the 21st century.

The programs of the Office of Energy Efficiency and Renewable Energy (EERE) funded by the Interior and Related Agencies Appropriations Subcommittee are designed to significantly improve the fuel economy of automobiles and other vehicles, to increase the productivity of the nation's most energy-intensive industries, and to improve the energy efficiency of buildings and appliances. EERE's programs work in voluntary cost-shared partnerships with the nation's industries, utilities, states, and the public to advance the development and deployment of clean and efficient energy technologies. By developing the means to more cost-effectively manage energy use, EERE provides tools for the nation, its industries, and its citizens to be smart about energy—to use energy more efficiently, with fewer financial and environmental costs. By developing and accelerating the use of energy efficiency technologies, EERE's programs help to strengthen the economy, improve the environment, and ensure a more secure future.

Transportation

The U.S. transportation sector accounts for two-thirds of the nation's annual oil consumption and depends on oil for 97 percent of its fuel. The Office of Transportation Technologies (OTT) funds research, development and deployment of technologies that can significantly alter current trends in oil consumption. Commercialization of innovative vehicle technologies and alternative fuels is the nation's best strategy for reducing reliance on oil. These advanced technologies could also result in dramatic reductions in criteria pollutants and greenhouse gas emissions from the transportation sector. The development and market acceptance of these technologies (including advanced direct-injection engines, hybrid-electric drive systems, advanced batteries, fuel cells, and light weight materials) and alternative fuels (including ethanol from biomass, natural gas, methanol, electricity and biodiesel) have the potential to reduce oil consumption by nearly 1 million barrels per day in 2010 and nearly 2 million

barrels per day in 2020. Fuel use efficiency improvements could reduce greenhouse gas emissions by 25 million metric tons in 2010, and 60 million metric tons in 2020.

OTT is a leader in the industry/government **Partnership for a New Generation of Vehicles (PNGV)**, which focuses on significantly improving the fuel economy of automobiles and reducing associated emissions. Cost-shared research and development activities in support of PNGV emphasize four key technology areas: hybrid-electric drive systems, advanced direct-injection engines, fuel cells, and lightweight materials. In particular, OTT is working to advance the PNGV goal of developing, by 2004, the prototype of mid-sized cars capable of 80 miles per gallon, and a two-thirds reduction in nitrogen oxides (NO_x) and carbon dioxide (CO_2) emissions, without compromising safety, comfort, performance, and affordability. The auto industry provides a significant share of the funding for PNGV research. Recent announcements by the auto industry indicate that progress toward the PNGV goal is proceeding on schedule and the government-industry partnership is working as envisioned.

Trucks, including Sport Utility Vehicles (SUV), account for virtually all of the increase in fuel consumption of highway vehicles since the 1973 oil embargo. This is due primarily to the relatively low fuel economy of the increasingly popular small trucks. Currently, light trucks consume nearly as much fuel as automobiles. The goals of the Heavy Vehicle R&D program are to: develop, by 2002, advanced ultra-low emission diesel engine technologies that enable pickup trucks, vans, and sport utility vehicles to achieve at least a 35 percent efficiency improvement relative to current gasoline engines; improve the engine efficiency of heavy duty truck engines from 45 percent to 55 percent while reducing emissions to near-zero levels; reduce parasitic loses from aerodynamic drag and rolling resistance; and make greater use of lower weight high strength materials for all classes of trucks. However, to achieve the efficiency, environmental, and economic goals in the truck market, additional research on fuel composition, how to combust fuel cleanly in the engine, and the use of exhaust aftertreatment technologies to further reduce emissions, are necessary.

Industry

Industry consumes over a third of the energy delivered in the United States and spends tens of billions of dollars annually for pollution abatement and control. Nine industries account for 75 percent of the energy used in industry: forest products; steel; aluminum; metal-casting; chemicals; petroleum refining; agriculture; mining; and glass. These industries also account for over 80 percent of air emissions and over 90 percent of waste produced by U.S. manufacturing. The Office of Industrial Technologies (OIT) focuses on developing technologies that assist the nation's most energy-intensive industries in becoming more resource efficient and economically competitive, while also polluting less.

These industries could save over $10 billion in industry energy costs by 2010, and reduce carbon dioxide emissions by millions of tons per year. In collaboration with these nine industries, OIT is developing improved technologies that reduce energy needs, costs, and associated environmental impacts. For example, OIT is conducting research to reduce nitrogen oxide and other emissions from combustion processes in steel production and to improve recycling of iron units from current production processes. OIT is also developing an advanced production cell that will result in a more efficient and cost-effective aluminum manufacturing process. OIT's industry-specific R&D strategies are balanced with crosscutting technology development programs such as advanced turbines, materials and combustion research, and technical and financial assistance programs including the Industrial Assessment Centers and the Inventions and Innovation programs.

Buildings

America's homes and offices consume roughly $220 billion worth of energy each year. Heating and cooling, lighting, appliances, and equipment in buildings together account for over one-third of U.S. carbon emissions. The Office of Building Technology, State and Community Programs (BTS) is working with its partners in the private sector and in state and local governments to make the nation's building stock more energy-efficient, comfortable, and affordable.

The Buildings Research and Standards program integrates building codes, research, and development activities. Residential and commercial building construction, renovation, and operating efficiencies are addressed via a "systems" approach which targets not only the optimization of building functions such as lighting, heating, cooling, and ventilation, but also the construction practices, the delivery mechanisms, and the efficient use of resources. R&D efforts are directed to the building equipment, materials, and design tools and the associated buildings codes and building equipment and appliance standards. These R&D efforts are coordinated with industry and trade organizations. In addition, joint industry-government Technology Road Maps are being developed for primary R&D efforts; Competitive R&D awards are also undertaken to encourage and to foster technology innovation.

The Technology Assistance Program complements the R&D efforts and accelerates the deployment of new technologies and the adoption of advanced building practices through technical and financial assistance, outreach, and selective demonstration activities. Outreach efforts include the Energy Star program jointly-administered with EPA, which identifies outstanding energy efficient and environmentally beneficial products. Demonstration efforts validate advanced technologies with cost-shared industry partners on the path to commercialization. In addition, State Energy Program grants to state and local governments create a national network for energy efficiency and the Weatherization Assistance Program engages state and local partners to increase the efficiency of homes occupied by low-income citizens - particularly the elderly, persons with disabilities, and families with children - that can least afford rising energy bills.

Federal Energy Management Program

As the nation's largest single energy user, the federal government spends roughly $8 billion each year on energy used in its facilities and operations. The Federal Energy Management Program (FEMP) achieves significant federal cost savings and associated environmental benefits by assisting federal agencies in identifying, financing, and implementing energy efficiency and renewable projects in federal facilities. In fact, FEMP exceeded its interim goal of reducing energy consumption in federal buildings per square foot by 10 percent between 1985 and 1995 and is well on its way towards meeting its goal of a 20 percent reduction by 2000.

There are 26 government-wide Super-Energy Saving Performance Contracts (ESPCs) which any agency can use and by the end of FY 2000, FEMP will have put into place another 17 contracts. These streamlined Super-ESPC contracts use private capital to provide energy efficiency services to federal facilities across the nation, and allow federal agencies to pay for these services through energy cost savings. By FY 2000, orders valued at $100 million will be put into place.

Budget Overview

The FY 2000 Congressional Budget Request for Energy Conservation is $837.5 million, 21% above the FY 1999 enacted level. The total FY 2000 budget for the total Energy Efficiency

and Renewable Energy program, including both the Energy Conservation and Solar and Renewable energy activities is $1,236.4 million (gross), 20% above the FY 1999 enacted level. All of EERE's R&D activities are key components of the **President's Climate Change Technology Initiative**. Increases in FY 2000 reflect the continued support of the Administration for Energy Efficiency and Renewable Energy programs as a cost-effective solution to reducing greenhouse gas and other emissions, improving U.S. energy security, and advancing the nation's economic competitiveness.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Energy Conservation					
Energy Conservation R&D					
Transportation sector	189,972	202,071	252,100	50,029	24.8%
Industry sector	133,911	165,859	171,000	5,141	3.1%
Federal energy management program	19,800	23,818	31,868	8,050	33.8%
Building technology, state and community sector — non-grants	77,607	96,221	144,881	48,660	50.6%
Policy and management	28,925	37,732	46,666	8,934	23.7%
Total, Energy conservation R&D	450,215	525,701	646,515	120,814	23.0%
Building technology, state, and community sector — grants	155,095	166,000	191,000	25,000	15.1%
Subtotal, Energy Conservation	605,310	691,701	837,515	145,814	21.1%
Use of nonappropriated escrow funds (PODRA) in SLAP	-20,611	-64,000	——	64,000	100.0%
Use of prior year balances	-345	——	——	——	——
Total, Energy Conservation	584,354	627,701	837,515	209,814	33.4%
Full time equivalent employment (FTEs)	*419*	*441*	*426*	*-15*	*-3.4%*

FY 2000 Budget Request

The FY 2000 Budget Request supports EERE's work on research, development, and deployment activities that lead to energy savings, enhanced industrial productivity and competitiveness, environmental benefits, and carbon emissions reductions. The following discussion outlines EERE's approach in FY 2000 to some of its major activities. Detailed information on budget changes for each of EERE's programs is provided in the subsequent section.

- **Partnership for a New Generation of Vehicles** (*FY 1999 $128.1; FY 2000 $143.1*) DOE provides technical leadership for this initiative which involves the major U.S. vehicle manufacturers and multiple federal agencies. R&D is focused on the Partnership for a New Generation of Vehicles' (PNGV) goal of developing an 80 mile-per-gallon family car with no compromises to size, safety or performance, with achievement of a production prototype by 2004. In FY 2000, success will be measured by progress toward performance goals in several key component

technologies—fuel cells, advanced direct-injection engines, exhaust control, advanced batteries, and electronic power controllers.

- **Clean Cities** program efforts (*FY 1999 $7.9; FY 2000 $10.7)* will advance vehicle deployment and infrastructure development in over 65 participating communities. Several of these local programs are linking across regional and state boundaries to strengthen efforts, expand purchasing power, and establish refueling infrastructure along Clean Corridors to enable the inter-city travel of alternative fuel vehicles.

- "**Industries of the Future - Specific**" public-private partnership efforts *(FY 1999 $57.5; FY 2000 $74.0)* focus on developing technologies that cut energy use, emissions, and waste in multiple industries and provide cost-effective solutions to reduce greenhouse gas emissions. FY 2000 efforts concentrate on a new biogasification initiative and accelerated development of a new electrode system for aluminum production. In addition, efforts with the Petroleum industry are revitalized after a period of reorientation to develop a technology road map for future joint R&D.

- **Building Research and Standards** *(FY 1999 $61.5; FY 2000 $88.2)* are the key components of the Buildings for the 21st Century strategy—which focuses on "whole-buildings" to integrate R&D on building systems, equipment, and other components. Included are Technology Road Maps and Competitive R&D ($7.5 million) to fund new cost-shared R&D projects that offer the greatest energy savings and environmental benefits in key technologies; Residential Building Integration ($13.5 million) which includes the *Building America* initiative that supports the development of more than 2,000 new homes using highly efficient, advanced building technologies and building techniques; Commercial Buildings Integration ($6.3 million) which works to realize energy-saving opportunities through a whole buildings approach as well as regulatory activities; and Equipment, Materials, and Tools research ($60.8 million) which also addresses appliance standards activities.

- **Building Technology Assistance** *(FY 1999 $187.5; FY 2000 $232.4)* incorporates grants, Community Partnerships, and Energy Star programs to deploy the results of the building R&D programs. The **Weatherization Assistance Program** *(FY 1999 $133.0; FY 2000 $154.0)* supports the weatherization of 76,900 low-income homes, while the **State Energy Program** *(FY 1999 $33.0; FY 2000 $37.0)* supports grants that promote innovative state energy efficiency and renewable energy activities. The **Community Partnerships Program** *(FY 1999 $18.8; FY 2000 $35.4)* helps States, cities, business improvement districts, homebuilders, retailers, public institutions, and non-profits to establish more energy efficient and comfortable buildings. The Energy Star Program *(FY 1999 $2.7; FY 2000 $6.0)* identifies and promotes appliances, equipment, home, and buildings that significantly exceed present energy efficiency standards.

- **The Federal Energy Management Program** *(FY 1999 $23.8; FY 2000 $31.9)* will continue to emphasize Energy Savings Performance Contracts (ESPCs) which utilize private sector funding to finance energy conservation projects through the resulting energy savings. Efforts will also target placing 20,000 solar roofs on federal facilities by 2010 as part of the President's Million Solar Roofs Initiative.

Highlights of Program Changes ($ in millions)

Transportation Sector *(FY 1999 $202.1; FY 2000 $252.1)* **+$50.0**

- **Hybrid Systems R&D** *(FY 1999 $42.1; FY 2000 $48.9)* increases emphasis on developing high performance hybrid system components for light and heavy vehicles, and accelerating the time to market. High power energy storage systems and advanced power electronics are key components for the development of practical hybrid vehicles. +$6.8
- **Advanced Combustion Engine R&D** *(FY 1999 $37.7; FY 2000 $55.8)* efforts, to greatly improve fuel economy while simultaneously reducing harmful emissions from direct injection engines, will be increased. Recent regulatory actions have considerably increased the emission control challenges. The Light and Heavy Truck Engine Programs support increased efforts to develop technologies which can meet stricter California air standards and 2004 EPA Tier II emission regulations. +$18.1
- **Advanced Petroleum Based Fuels** *(FY 1999 $6.6; FY2000 $12.4)* Additional funds will be used to accelerate activities to develop new fuel formulations for use in advanced high efficiency power plants. This is also critical to enable meeting future emissions standards with high fuel use efficiency. +$5.8
- **Fuel Cell R&D** *(FY 1999 $33.5; FY 2000 $41.4)* supports critical development of catalysts and other fuel processor components that can be integrated into a complete fuel processor subsystem meeting PNGV Year 2000 targets for efficiency, weight, and volume. The automotive-sized fuel processor will be able to convert gasoline, methanol, ethanol, and natural gas to a clean, hydrogen-rich stream for efficient fuel cell operation. +$7.9
- **Cooperative Automotive Research for Advanced Technologies (CARAT)** *(FY 1999 $2.3; FY 2000 $7.0)* increases support competitively awarded work with small businesses and universities on innovative technologies. A portion of these funds support the Graduate Automotive Technology Education (GATE) program to develop a highly qualified work force while addressing technical barriers and developing advanced, graduate level automotive curricula. +$4.7
- **Technology Deployment** *(FY 1999 $13.0; FY 2000 $17.7)* supports voluntary Clean Cities programs. These increases support deployment of alternative fueled vehicles and very efficient vehicles, infrastructure development, advanced vehicle deployment, safety-related issues, and program evaluation. +$4.7
- **Management and Planning** *(FY 1999 $7.9; FY 2000 $9.8)* activities for planning and evaluation increase to support cost estimation of advanced vehicle technologies, and for cost-of-living-adjustments (COLAs**) to salaries.** +$1.9

Industry Sector *(FY 1999 $165.9; FY 2000 $171.0)* **+$5.1**

- **"Industry of the Future - Specific" *(***FY 1999 $57.5; FY 2000 $74.0)* public-private R&D partnerships with specific energy and waste intensive industries increase particularly the Aluminum (+3.0) and the Forest and Paper Products (+7.0) industries which support low-cost, more efficient aluminum production and biogasification initiatives, respectively. +$16.5
- **Industries of the Future** - Crosscutting activities *(FY 1999 $100.1; FY 2000 $87.6)* decrease overall as the **Advanced Turbine Systems** (ATS) program efforts

wane as the program nears completion for commercialization in 2001 with a 15 percent improvement in system efficiency and an 80 percent reduction in emissions. Efforts support an efficient and restructured electric utility market with options for decentralized generation of electricity in combination with heat and power production. Advanced materials R&D, combustion research, and outreach efforts increase slightly. -$12.5

- **Management and Planning** *(FY 1999 $8.3; FY 2000 $9.4)* activities for planning and evaluation increase, and salaries for cost-of-living-adjustments (COLAs). +$1.1

Building Technology, State and Community Sector *(FY 1999 $262.2; FY 2000 $335.9)* **+$73.7**

- **Building Research and Standards** *(FY 1999 $61.5; FY 2000 $88.2)* increase supports "whole-buildings" design technologies and practices to integrate Residential and Commercial Buildings systems, equipment, and other components (+3.9 and +3.8). In addition, underlying Equipment, Materials, and Tools research (+17.8) is conducted, which also addresses the associated standards; the Technology Road Maps and Competitive R&D program (+1.1) funds cost-shared R&D projects that target environmental benefits and energy savings. +$26.7

- **Building Technology Assistance - non-grants** *(FY 1999 $21.5; FY 2000 $41.4)* These efforts, which include Community Partnership activities (+16.6), work with States, business improvement districts, homebuilders, retailers, public institutions, and non-profits, to establish more energy-efficient and comfortable buildings. *Building America*, one of the Community Partnerships initiatives, supports the development of new home communities that use advanced building technologies and techniques. EnergyStar labeling efforts with EPA (+3.3), identify highly energy-efficient and environmentally benign products and buildings. +$19.9

- **Building Technology Assistance - State grants** *(FY 1999 $166.0; FY 2000 $191.0)* funding for the **Weatherization Assistance Program** *(FY 1999 $133.0; FY 2000 $154.0)* support the weatherization of 76,900 low-income homes, and the **State Energy Program** *(FY 1999 $33.0; FY 2000 $37.0)* grants promote innovative state energy efficiency and renewable energy activities, increase +$21.0 and +$4.0 million, respectively. +$25.0

- **Management and Planning** *(FY 1999 $13.2; FY 2000 $15.3)* activities for planning and evaluation increase, as do salaries for cost-of-living-adjustments (COLAs). +$2.1

Federal Energy Management Program (FEMP) *(FY 1999 $23.8; FY 2000 $31.9)* **+$8.1**

FEMP increases promote the application of energy efficiency measures to buildings and operations to increase efficiency and reduce government energy consumption by 30 percent by 2005 including:

- **Project Financing** *(FY 1999 $9.9; FY 2000 $13.4)* assistance increases allowing more agencies to participate in alternative, private-sector financed ESPCs. Increase also supports the centralization and coordination of services through the FEMP Service Network (FSN). +$3.5

- **Direct Technical Guidance and Assistance** *(FY 1999 $7.4; FY 2000 $10.2)* such as project design assistance, development and proliferation of software and other design tools, and training is enhanced. +$2.8

- **Interagency coordination efforts, policy development, outreach, and the Regional Energy Action Teams** increase *(FY 1999 $4.4; FY 2000 $5.4)* as efforts to expand ESPC authority to mobile applications, such as ships and aircraft, is pursued. +$1.0

- **Management and Planning** *(FY 1999 $2.1; FY 2000 $2.9)* activities for planning and evaluation increase, as do salaries for cost-of-living-adjustments (COLAs). +$0.8

Policy and Management *(FY 1999 $37.7; FY 2000 $46.7)* **+$9.0**

- Headquarters *(FY 1999 $14.5; FY 2000 $18.5*) activities increase support to centrally funded Departmental and organizational initiatives whose benefits crosscut individual program areas (+$1.9), such as evaluation and planning efforts. Other activities including HQ salaries, contractual and support services, and Working Capital Fund increase +$2.3. +$4.2

- The Golden Field Offices *(FY 1999 $4.8; FY 2000 $5.0)* and the six Regional Support Offices *(FY 1999 $14.0; FY 2000 $17.7)* increases support implementation of programmatic initiatives. +$3.9

- International Market Development *(FY 1999 $2.6; FY 2000 $3.9)* activities increase to capture strong export opportunities for energy efficient products through trade promotion and market evaluations. +$1.3

Economic Regulation

Mission

Offices financed in the Economic Regulatory Administration appropriation are undergoing changes in their mission resulting from significant reductions in their activity related to Petroleum Overcharge and related legislation. The Compliance activity organized within the Office of General Counsel has declined to a level which requires no new appropriations. Prior year balances are adequate to finance shutdown activity. The follow-on regulatory activities administered in the Office of Hearings and Appeals follow the completion of the Compliance activity. As a result, appropriations will continue to be necessary in FY 2000.

Program Overview

Office of General Counsel (Compliance)

This program administers the enforcement activities resulting from a wide spectrum of oil pricing and allocation regulations that governed the petroleum industry throughout most of the 1970's. The program currently consists of litigating and negotiating settlements of those cases previously developed, of which approximately ten still remain unresolved.

Hearings and Appeals

The Office of Hearings and Appeals (OHA) is responsible for all of the Department's adjudicatory processes other than those administered by the Federal Energy Regulatory Commission. OHA's enforcement work is nearly concluded. However, OHA continues to conduct refund proceedings that return petroleum overcharge funds that are collected by the Department to parties who were injured by those overcharges, and to the states and federal government for indirect restitution. Funding for these activities is sought under Economic Regulation in the Interior and Related Agencies appropriations.

Over the years, OHA has gained jurisdiction over a wide variety of other matters including: the Freedom of Information Act and Privacy Act Appeals; evidentiary hearings to determine an employee's eligibility for a security clearance; and requests for exception from DOE regulations and orders, such as reporting requirements to the Energy Information Administration. Funding for these activities is being sought in Energy and Water Development appropriations.

Budget Overview

Office of Hearings and Appeals

The budget request of $2.0 million is for processing applications for refunds and for related activities arising from the regulatory program initiated under the Emergency Petroleum Allocation Act of 1973. Excess monies from refund processing are transferred to the Treasury Department for deficit reduction.

Economic Regulation

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Economic Regulation					
Office of Hearings and Appeals	2,725	1,801	2,000	199	11.0%
Full time equivalent employment (FTEs)	*22*	*17*	*16*	*-1*	*-5.9%*

FY 2000 Budget Request

Office of Hearings and Appeals is seeking $2.0 million of new budget authority to conduct its regulatory program. Most expenses are related to its professional staff with personnel compensation and benefits expenses equal to $1.5 million, and support services equal to $0.5 million. Support services are primarily provided within the Department's Working Capital Fund, and include rent, supplies, printing and communication, and information technology. In FY 2000, the Office of Hearings and Appeals expects to resolve 1,300 refund cases and to refund about $150.0 million in direct restitution to theses applicants. OHA may also commence final distributions of its crude oil refund provided that DOE concludes all enforcement proceedings so that the amount available for distribution is known.

Highlights of Program Changes ($ in millions)

Office of Hearings and Appeals *(FY 1999 $1.8; FY 2000 $2.0)* **+$0.2**

Increase is due to the pay raise.

Strategic Petroleum Reserve

Mission

The mission of the Strategic Petroleum Reserve (SPR) is to reduce U.S. vulnerability to economic, national security, and foreign policy consequences of petroleum supply interruptions. The SPR discourages supply disruptions being used as a threat by other nations by being prepared to respond rapidly to such threats in concert with the International Energy Agency alliance of 23 industrial nations by adding to crude oil supplies in the United States at the direction of the President.

Program Overview

The program requires that each SPR site and terminal be capable of transitioning within 15 days from operational readiness to a sustainable drawdown rate for the reserve of 4.1 MMB/day by the year 2000. The program is currently at 4.0 MMB/day. The SPR maintains a continual readiness posture through its operational programs, initiatives and tests. The SPR facilities and systems have been designed and constructed to achieve high levels of both reliability and availability. In 1994, the SPR implemented a Life Extension Program scheduled for completion in 2000 to maintain high standards of system reliability and availability and to extend the life of the Reserve through the year 2025. The Life Extension Program is accomplishing this by streamlining site configurations and standardizing equipment across the Reserve to reverse obsolescence, improve long term reliability, and reduce maintenance and operating costs. At the Weeks Island site, being decommissioned because of concerns about long term mine integrity, primary oil removal was virtually completed in January 1997. The site is now being backfilled with brine to ensure long-term mine stability and oil skimming is scheduled for completion in April 1999. Decommissioning is scheduled for completion in December 1999, with follow-on monitoring to assure geotechnical stability, mine integrity, and emergency response capability. Following the decommissioning, the program will maintain a 680 million barrel capacity at the four remaining sites. The current inventory level of 561 million barrels of crude oil provides the equivalent of 60 days of net import protection, a reduction from the 63 days of net import protection provided by 563 million barrels at the end of 1997. By FY 2000, at the maximum sustainable rate, the Reserve inventory will be able to provide 39% of U.S. imports for 90 days.

Budget Overview

The FY 2000 budget request for the Strategic Petroleum Reserve Account provides $159.0 million for storage site maintenance, security, drawdown testing and readiness; maintains monitoring to measure possible intrusion of gas into the oil inventory; and completes the decommissioning of the Weeks Island storage facility in December 1999. Funding for Life Extension contract awards is completed. This request also includes $5 million for the SPR Petroleum Account; the source of funds to finance the incremental costs of an energy supply drawdown. The current balance of $33 million provides only about 55% the incremental costs of a six month drawdown; the additional funding will improve that capability to approximately four months of full drawdown operations.

Strategic Petroleum Reserve

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Strategic Petroleum Reserve					
SPR — Facilities development	207,500	160,120	159,000	-1,120	-0.7%
SPR Petroleum Account	——	——	5,000	+5,000	100.0%
Total, Strategic Petroleum Reserve	207,500	160,120	164,000	+3,880	+2.4%
Full time equivalent employment (FTEs)	*132*	*135*	*125*	*-10*	*-9%*

FY 2000 Budget Request

The FY 2000 budget request for SPR operations and management is $159 million; a 1% reduction from the FY 1999 appropriation of $160.1 million and a 44% reduction from FY 1996's peak level of $284 million. These reductions reflect the successful completions in FY 2000 of the Life Extension Program and Weeks Island Decommissioning, as well as the completion of treatment for gas-in-oil by the end of the first Quarter FY 1998. This 1% decrease reflects the resumption of post Life Extension Program full standby operations and maintenance activities offset by the reduction in funding for the Life Extension Program. It also reflects the substantial cost reductions made possible by the Life Extension investment while providing a highly reliable state of operational readiness.

This request maintains a highly reliable level of operational readiness consistent with program Level 1 Performance Criteria, continues the Drawdown Readiness Program, performs annual drawdown exercises, continues the environmental safety and health (ES&H) program, and funds the management of the SPR program. It supports FY 2000 program objectives to complete Weeks Island oil skimming (April 1999) and decommissioning (December 1999); initiate long term monitoring of Weeks Island to assure mine stability; continue the monitoring program for gas intrusion/regain; and conduct testing of major SPR systems in the post-Life Extension Program era at all sites.

The FY 2000 budget request for the SPR Petroleum Account is $5 million. At the end of FY 1998, this account's remaining balance of $33 million was capable of supporting approximately 55% of a full SPR energy emergency drawdown for a six month period. Assurance of financing to initiate and sustain drawdown operations until sales receipts are available to support drawdown activities is critical to SPR drawdown readiness. The addition of $5 million to the SPR Petroleum Account assures the capability to sustain drawdown operations for close to four months of the six month performance criteria. Resuming oil fill is a high priority and a number of oil acquisition opportunities that do not require appropriations are being evaluated. The initial objective is to replace the 28 million barrels sold. This would arrest the decline in net days of import protection provided by the SPR; the result of increasing dependence on crude oil imports.

For FY 2000, the SPR requests new Budget Authority.

Highlights of Program Changes ($ in millions)

Strategic Petroleum Reserve **+$3.9**

- Decrease in year-to-year level of the Life Extension Program **(LEP)** activities to extend the life of drawdown critical systems such as pipelines, valves and pumping

equipment. Completion of the LEP by the year 2000 will assure the capability of the SPR to effectively perform its mission thru the year 2025. -$10.6

- Increase reflects resumption of post Life Extension Program full standby operations and maintenance activities. +$4.8
- Increase reflects contingency for Weeks Island decommissioning requirements offset by completion of site decommissioning. +$1.6
- Increase reflects increased Major Maintenance design and construction activities offset by completion of site decommissioning. +$3.1
- Funding to support incremental cost of drawdown activities (at the President's direction) in response to an energy supply emergency. +$5.0

PROGRAM PERFORMANCE AND OUTCOME MEASURES

The SPR program planning, operations, and outcome assessments are driven by a comprehensive set of Level 1 Technical and Performance Criteria to assure program readiness and capability to drawdown and distribute crude oil at designed rates within 15 days of a Presidential drawdown order. The achievement of this capability is measured by 20 top level measures that are quantified and linked to resources required to achieve them. At the end of FY 1998, the SPR met or exceeded 19 of the 20 targeted goals, achieving 95% of all performance goals established in the Program Performance Plan.

Energy Information Administration

Mission

To be the nation's primary source of comprehensive energy information, providing high quality energy data, analysis, and forecasts to customers in government, industry and the public in a manner that promotes sound policymaking, efficient markets, and public understanding.

Program Overview

As an independent statistical/analytical agency, the Energy Information Administration (EIA) has two primary roles. The first role is to conduct functions required by statute, the development and maintenance of a comprehensive energy database and publication of reports and analysis for a wide variety of customers and specific reports required by law. Second, EIA satisfies inquiries for energy information from policymakers primarily in the Department and Congress, and from other government entities, the energy industry, and the general public. To fulfill these roles, EIA collects, analyzes, and disseminates information on energy reserves, production, consumption, distribution, prices, technology, and related international, economic, and financial markets.

Budget Overview

The FY 2000 budget request is $72.6 million which will fund EIA data and analysis activities supporting energy issues related to energy use. EIA's base program consists of: the maintenance of a comprehensive energy database, the publication of reports and analyses for a wide variety of customers in the public and private sectors, the maintenance of the National Energy Modeling System for mid-term energy markets analysis and forecasting, the maintenance of the Short-Term Integrated Forecasting System for near-term energy market analysis and forecasting, customer forums and surveys to maintain an up-to-date product and service mix, and the continued development of electronic dissemination of products such as the EIA Internet home page and CD-ROM. In addition, the FY 2000 budget request emphasizes four priorities:

- Overhaul EIA's energy consumption surveys. In FY 2000, EIA's energy consumption surveys will have operated for 20-years based on the same statistical frame (e.g., the complete population for sampling) design, far beyond the usual 10-year life-cycle tied to the census. In FY 2000, EIA will begin updating the survey frames, sampling design, and data systems. This redesign will realign the consumption surveys' coverage with the distribution of residential and commercial buildings populations identified with the 2000 census. This multi-year effort is expected to continue for four more years when the updated sample design, survey frames and data systems are fully implemented.
- Continuing an overhaul of EIA's electricity surveys and data systems to reflect changes in the restructuring of the nation's electricity generation and distribution systems. All EIA areas associated with data collection, analysis, and reporting will be significantly revised and overhauled to reflect the evolving competitive electricity industry. This multi-year effort will need two more years before the overhauled electricity data collection and reporting systems will be completed and fully implemented.

- Continuing an overhaul of EIA's natural gas surveys and data systems to reflect changes in the restructured natural gas industry. EIA will progress on a three-phase plan to overhaul natural gas surveys and data systems. These three phases are: 1) collect detailed information on the evolving structure and operation of the natural gas industry identifying critical data needs and sources; 2) develop and field test natural gas surveys and data systems; and 3) implement the overhauled natural gas survey and data systems. This multi-year overhaul of the natural gas data collection and data systems will continue for two more years when the updated systems are fully implemented.
- Building on EIA's capabilities to address increasing requests for international energy analysis and projection of the impact of carbon mitigation strategies. In FY 2000, EIA will continue the evaluation of available international modeling capabilities to assess energy policies, including regulatory actions and/or technological change, and international carbon permit trading schemes. This multi-year effort is expected to continue for two more years before the required analytical capabilities are fully incorporated.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Energy Information Administration					
National energy information system	66,800	70,500	72,644	2,144	3.0%
Full time equivalent employment (FTEs)	*382*	*378*	*371*	*-7*	*-1.9%*

FY 2000 Budget Request

At the FY 2000 request level, EIA will produce approximately 240 reports and analyses covering a wide variety of energy issues. EIA will respond to about 300,000 inquiries and requests for energy information. The FY 2000 program will continue to support statistical activities such as analysis and data collection in response to electric industry restructuring. EIA will continue to maintain the present high level of service to our customers by continuing our customers' feedback analysis program to corporately review feedback and to develop ways to improve the products and services delivered. During FY 2000, EIA will continue its expansion of our customer base and the avenues through which we communicate by increasing the number of daily users of its Internet site by 25 percent and increasing the citations of EIA information in the media by 10 percent. In the area of timeliness of information, EIA will continue efforts to increase the number of customers who are not just ***satisfied***, but are ***very satisfied*** with timeliness of energy data as determined by survey.

Oil and Gas - $18.2 million 88 FTEs

EIA will continue to collect and publish weekly, monthly, and annual statistics on the supply of crude oil and refined petroleum products, and data on crude oil and petroleum sales and prices. The program will produce an annual data series on reserves and production of crude oil and natural gas. EIA will continue to overhaul the natural gas surveys and data collection systems to reflect changes in the restructured natural gas industry.

Coal, Nuclear, Electric and Alternative Fuels - (FY 1999 $11.0; FY 2000 $10.8),

63 FTEs

EIA will collect and publish coal, electric, nuclear and renewable energy information, statistics and short-term forecasts. In addition, surveys will be updated to incorporate data on electric industry restructuring. EIA will continue an overhaul of electricity data surveys and data collection systems to reflect changes in the restructuring electricity industry.

Energy Markets and End Use - (FY 1999 $9.1; FY 2000 $9.8), 58 FTEs

This budget supports analysis of current energy markets, surveys of energy consumers, integrated energy supply and demand statistics, financial analysis of the energy industry, emergency preparedness, and the preparation of monthly and annual integrated energy statistical publications. Publications include information on international energy markets; baseline short-term energy forecasts; and residential, commercial, and manufacturing energy consumption. EIA will initiate the comprehensive energy consumption survey redesign that makes use of population data resulting from the FY 2000 census.

Integrated Analysis and Forecasting - (FY 1999 $8.4; FY 2000 $9.4), 60 FTEs

This program will maintain the National Energy Modeling System used for mid-term energy supply, demand projections, and policy analysis. EIA will continue to collect data, and conduct analyses of greenhouse gas emissions. EIA will continue modeling enhancements in order to address requests for international energy analysis and projections of the impacts from integration of carbon mitigation strategies.

Information Technology - (FY 1999 $9.8; FY 2000 $9.0), 40 FTEs

These funds will be used for computer services to support EIA-wide activities.

National Energy Information Center - (FY 1999 $2.3; FY 2000 $2.2), 17 FTEs

Operation of the National Energy Information Center will respond to public inquiries, provide publication preparation support, and continue dissemination activities for EIA products.

Statistics and Methods - (FY 1999 $2.3; FY 2000 $2.4 million), 19 FTEs

This program will maintain and enhance statistical integrity of EIA's energy data, and evaluate the quality and meaningfulness of EIA's information.

Resource Management - (FY 1999 $11.3; FY 2000 $10.8), 26 FTEs

Provide overall management and administrative support to EIA, including program planning, financial, contracts, and human resource management, administrative support and logistic support services. Also, included is EIA's share of costs to the Working Capital Fund.

Highlights of Program Changes ($ in millions)

Energy Information Administration *(FY 1999 $70.5; FY 2000 $72.6)* **+$2.1**

Increase due to: 1) additional funding needed to upgrade energy information surveys and data systems to address increased requests for international analysis and changing energy industry; and 2) higher personnel costs associated with the pay raise and promotions.

Clean Coal Technology

Mission

The Clean Coal Technology Program is a technology development effort jointly funded by the U.S. government and industry to demonstrate the most promising advanced coal-based technologies for using coal cleanly, efficiently (reducing CO_2 emissions), and cheaply to meet our domestic energy needs and to generate the data needed for the marketplace to judge their commercial potential, with the most promising technologies being moved into the domestic and international marketplace by private industry. Underlying this objective is the recognition that the vast, and relatively inexpensive U.S. coal reserves represent a critical energy resource which can provide a significant economic advantage to the nation. However, these benefits can only be realized when coal can be used in ways which are environmentally responsible and when advanced technology can achieve significantly higher efficiencies than existing commercial power plants.

Program Overview

The program began in 1985 with the objective of accelerating the pace at which advanced coal-based utilization technologies would enter commercial service. The program is of limited duration entailing five rounds of competition. Industry, by law must fund at least 50 percent of each project. Today, the five rounds have been awarded and the average industry cost share is 66 percent of the program's $5.7 billion in funding. Most of the projects from the early rounds have been completed and several are being used to meet Clean Air Act requirements. The more complex power generating systems are now moving into construction and operation. These technologies will be ready for repowering or greenfield applications in the 2000-2010 time-frame. The technologies being demonstrated in the program are grouped into four primary market applications: Advanced Electric Power Generation Systems, which offer the prospect of much higher efficiency coal-based power plants to meet the energy demand requirement of the nation well into the next century; Environmental Control Devices, which offer more attractive ways to reduce emissions from existing powerplants and industrial facilities both domestically and in international markets; Coal Processing for Clean Fuels, which offers coal feedstock conversion to produce a stable fuel of high energy density that can be used to produce steam electricity, or that can be used as a transportation fuel; and Industrial Applications, which offer superior ways to competitively manufacture key commodities such as steel in an environmentally responsive manner.

Budget Overview

The Clean Coal Technology program operates in FY 2000 with previously appropriated funding. The Administration's policy calls for limiting the program to existing projects currently under contract.

	FY 1998 Appropriation	FY 1999 Appropriation	FY 2000 Request	FY 2000 vs. FY 1999	
Clean Coal Technology					
Advance appropriation	——	——	10,000	10,000	NA
Appropriation	-101,000	-40,000	-256,000	-216,000	-540%
Total, Clean Coal Technology	-101,000	-40,000	-246,000	-206,000	-515%
Full time equivalent employment (FTEs)	*61*	*67*	*61*	*-6*	*0%*

FY 2000 Budget Request

The FY 2000 budget proposes that $256.0 million be deferred until FY 2001 and beyond. The proposed deferral of funds reflects schedule delays, primarily resulting from project restructuring activities. The 40 active projects have a total cost of $5.7 billion of which DOE has committed $1.9 billion. At the end of FY 2000, 29 projects are expected to be completed and one additional project is expected to complete operation and begin preparing final reports. Four projects are expected to be in operation, three projects in construction, and three projects in design. At the end of FY 2000, two projects are expected to have outstanding obligation commitments. In FY 2000, the Clean Coal Program will complete the demonstration of the third integrated gasification combined cycle project (Pinion Pine), utilizing air-blown gasification and hot gas cleanup for improved thermal efficiency; and continued operations of one other project (Polk) in order to establish the engineering foundation leading to new generation of 60 percent efficient powerplants.

Highlights of Program Changes ($ in millions)

Clean Coal *(FY 1999 -$40.0; FY 2000 -$246.0)* **-$206.0**

Change reflects the net amount proposed for deferral; FY 2000 $-246.0 million versus the enacted FY 1999 deferral of $-40.0 million. The proposed deferral of funds reflects schedule delays, primarily resulting from project restructuring activities and has no programmatic effect.